



Langley Research Center

LPR 8800.1

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ENVIRONMENTAL PROGRAM MANUAL

National Aeronautics and Space Administration

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Responsible Office: Environmental Management Team, Center Operations Directorate

PREFACE

P.1 PURPOSE

This LPR sets forth procedural requirements and responsibilities to ensure that LaRC personnel comply with the Center's environmental program. LaRC is committed to conducting all operations in a safe, healthful and environmentally acceptable manner. The Center's environmental policy is "to comply with all applicable Federal, State, and local environmental regulations. In situations involving non-compliance, LaRC will take immediate corrective action in order to achieve compliance. LaRC seeks to minimize pollution whenever feasible. LaRC has a policy of continuous process improvement to assure responsible environmental stewardship consistent with Center goals and objectives."

P.2 APPLICABILITY

This LPR applies to all organizational elements of LaRC and to all personnel working in or visiting areas under the administrative control of LaRC.

P.3 AUTHORITY

Federal:

- 14 CFR Part 1216.3, "Environmental Quality"
- 29 CFR Part 1910.120, 1001, and 29 CFR Part 1926.58
- 40 CFR Part 61, 112, 173, 240-246, 261, 262, 265, 279, 302, 355, 372 761, 763, and 800
- 40 CFR Parts 1500-1508, Council on Environmental Quality NEPA regulations
- Clean Air Act of 1970 (CAA) and its Amendments of 1990 (CAAA)
- Clean Water Act and its Amendment
- EPA Comprehensive Procurement Guidelines
- Emergency Planning and Community Right-To-Know Act (EPCRA)
- Endangered Species Act
- Energy Policy Act
- Executive Order 13101, "*Greening the Government through Waste Prevention, Recycling and Federal Acquisition*," dated September 14, 1998
- Executive Order 13123, "*Greening the Government through Efficient Energy Management*," dated June 3, 1999
- Executive Order 13134, "*Developing and Promoting Biobased Products and Bioenergy*," dated August 12, 1999
- Executive Order 13148, "*Greening the Government through Leadership in Environmental Management*," dated April 21, 2000
- Executive Order 13149, "*Greening the Government through Federal Fleet and Transportation Efficiency*," dated April 21, 2000
- Federal Acquisition Regulation (FAR) Subpart 23.4, *Use of Recovered Materials*

Federal Water Pollution Control Act (FWPCA)
Hazardous and Solid Waste Amendments (HSWA) to RCRA
National Environmental Policy Act of 1969 (NEPA), as amended (42 United States Code (U.S.C.) 4321 et seq.)
National Historic Preservation Act
Noise Control Act of 1972
Occupational Safety and Health Act (OSHA)
Pollution Prevention Act of 1990
Quiet Communities Act of 1978
EPA's Recovered Materials Advisory Notice
Resource Conservation and Recovery Act of 1976 (RCRA)
Superfund Amendments and Reauthorization Act of 1986 (SARA)
Toxic Substances Control Act (TSCA)

State:

State Air Pollution Control Board Regulations 9VAC5
State Water Control Board Regulations 9VAC25
Virginia Waste Management Board Regulations 9VAC20
Virginia Department of Environmental Quality Regulations 9VAC15
Commonwealth of Virginia House Bill 1757

P.4 REFERENCES

NPD 8500.1, "NASA Environmental Management"
NPR 8820.3, "Pollution Prevention"
NPR 8830.1, "Affirmative Procurement Plan for Environmentally Preferable Products"
NPR 8580.1, "Implementing the National Environmental Policy and Executive Order 12114."
"NASA's Environmental Excellence Strategic Plan"
LPR 2710.1, "Langley Research Center Noise and Hearing Conservation Program"
LAPD 8800.1, "LaRC Environmental Compliance, Restoration and Pollution Prevention Program"
LPR 1740.2, "Facility Safety Requirements"
LPR 1710.12, "Potentially Hazardous Materials"
LaRC PCB Management and Spill Prevention, Control and Countermeasure Plan
Title III EPCRA and Clean Air Act Consolidated Chemical List

P.5 CANCELLATION

LPR 8800.1, dated August 9, 2004

original signed on file

Douglas L. Dwoyer
Associate Director for Operations

1 INTRODUCTION

1.1 RESPONSIBILITY

Conducting operations in an environmentally acceptable manner is each employee's responsibility. The success of LaRC's environmental program depends on cooperation and support from all LaRC employees.

Langley Policy Directive (LAPD) 8800.1, "LaRC Environmental Compliance, Restoration and Pollution Prevention Program," includes general responsibilities for LaRC management and organizations regarding the Center's environmental program. The directive specifies that overall responsibility for LaRC's environmental compliance, restoration, and pollution prevention program lies with the Center Director. Day-to-day management of the program is the responsibility of the LaRC Environmental Management Team (EMT). Each organizational unit is responsible for appointing, in writing, Facility Environmental Coordinators (FEC's) for facilities and operations under their cognizance. FEC appointments, updates and changes are to be made using the EMT website: <http://osemant1.larc.nasa.gov/envcord/database/coordm.cfm> FEC's are responsible for assuring proper environmental compliance for the activities within their designated facilities and the EMT is responsible for interfacing with the FEC's to achieve program objectives.

In addition to the general responsibilities described above, each chapter of this LPR details specific organization and personnel responsibilities according to the various environmental program areas.

Any questions concerning the responsibilities, procedural requirements contained in this LPR should be directed to the LaRC EMT at extension 43500.

1.2 COMPLIANCE

Failure to fully comply with the requirements of this LPR could result in federal or state regulatory action requiring substantial expenditure of NASA resources and possibly criminal prosecution of the individuals responsible for noncompliance. Citations and fines for violations of environmental laws and regulations are dependent upon the applicable law and the nature of the violation. Charges can range anywhere from civil charges for non-compliance to criminal charges for willful violation and/or withheld or falsified information. Penalties can range from an injunction to fines of up to \$50,000 per day and 3 years in prison depending on the nature of the violation.

In order to ensure compliance with Federal, State and local environmental regulations, the EMT conducts, on a continuing basis, multi-media environmental assessments of LaRC facilities. In cases of non-compliance with environmental laws or regulations, the EMT will take the necessary immediate action, including issuing a cease and desist order, to resolve the problem and bring the Center back into compliance. Assessment

results are documented and if corrective actions are necessary, the assessment reports include recommendations for making the necessary corrections. The EMT forwards the assessment report to the FEC who has 30 days to respond to the corrective actions. If a facility does not comply with the 30-day response deadline, the EMT will notify, in writing, the FEC's supervisor of the outstanding compliance issue(s) and set a schedule for compliance. If the compliance issue is still unresolved after the scheduled deadline for compliance, the EMT will notify, in writing, top management, of the violation and request that they intervene to resolve the issue.

When information affecting environmental compliance matters at the Center must be communicated to all personnel, the EMT will publish an Environmental Alert. Electronic copies of all environmental alerts can be found on the EMT web site at:
<http://osemant1.larc.nasa.gov/alerts/>.

1.3 RECORDS

Langley Form (LF) 44, "Hazardous Materials"
LF 163, "Waste Material Data Sheet"
LF 461, "NEPA Environmental Checklist"

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2 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

2.1 GENERAL

The purpose of this Chapter is to provide information on applicable regulatory requirements and procedures related to the environmental impact assessment of proposed programs or projects. In addition, it provides procedural requirements to ensure that environmental impact analysis is part of new projects during the conceptual study phase. The procedures are applicable to all LaRC employees and contractors who in any way participate in the development of projects, and the management of operations that may have an impact on the environment.

Environmental impact analysis must be a part of the earliest thinking on any proposed action or project. It requires continued evaluation and update as the proposed action develops. Environmental analyses, environmental assessments (EA's), and where necessary, environmental impact statements (EIS's) are used throughout the decision-making process of new or changed actions.

2.2 REQUIREMENTS

The National Environmental Policy Act of 1969 (NEPA), as amended (42 United States Code (U.S.C.) 4321 et seq.) establishes national policy concerning the protection and the enhancement of the environment. It requires Federal agencies to prepare detailed documentation on any action undertaken that could result in a significant impact on the environment. NASA Procedural Requirements (NPR) 8580.1, "Implementing the Provisions of the National Environmental Policy Act and Executive Order 12114," formalizes NASA policy in this area.

NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and actions are executed. The NEPA process is intended to help public officials make decisions that are based on the understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

2.3 ENVIRONMENTAL DOCUMENTATION

LaRC personnel or offices initiating actions covered by NEPA must prepare environmental analyses, assessments and impact statements in accordance with the requirements of this Chapter, NPR 8580.1, and other relevant Federal environmental laws, regulations, and Executive Orders. Preparation of these documents must be coordinated with the EMT early in the process. Figure 2-1 provides a general overview of the NEPA review and documentation process at LaRC.

2.3.1 Review and Documentation

As depicted in Figure 2-1, the first step of the process is to review the action or project using the Environmental Analysis Checklist provided in NASA Langley Form 461, "NEPA Environmental Checklist." The checklist is designed to assist the initiator in determining if the action has the potential to produce any type of environmental effect or impact.

The checklist provides a series of "YES-NO" type questions spanning all possible areas of activities that might result in an environmental impact. If, after having completed the checklist, all of the questions are answered "NO", the action is considered to have no potential to produce an environmental impact and is excluded from further environmental review. However, the initiator must document his/her review via a Record of Environmental Consideration (REC). An example of a REC is shown in Figure 2-2. After completing the REC and obtaining concurrence from the Head, EMT, the initiator must place the REC in the project files with the completed checklist. No further documentation is required. The REC must be reviewed for verification at the Preliminary Design Review and in the Preliminary Engineering Report, if one is prepared.

If, however, one or more of the questions on the checklist are answered with a "YES", the project initiator must prepare a detailed environmental analysis. The EMT may be contacted at extension 43500 for assistance in preparing the analysis. The initiator must gather information to determine the nature and extent of the impact(s). For example, if the question concerns the discharge of substances into the environment, the initiator must determine: the type of discharge, its volume, the duration and point of discharge, and any other pertinent information.

This information is used to determine whether or not the action will, or has the potential to, produce environmental impacts. If a review of the information in the environmental analysis shows that there will be no environmental impact, the review is complete. The initiator must then complete and sign a REC, Figure 2-2, and obtain the concurrence of the EMT. The REC must then be placed in the project file with the data and documentation compiled during the analysis and the completed checklist. This REC must also be verified at the Preliminary Design Review and in the Preliminary Engineering Report, if one is prepared.

If the detailed environmental analysis shows that the action might have a significant impact on the environment, the project initiator must prepare an environmental assessment. In some cases during completion of the environmental checklist, it will become apparent that the action will produce a significant environmental impact. In these cases the detailed environmental analysis step may be skipped. The initiator should proceed to the EIS. This is particularly true for actions that deal with wetlands, floodplains, or cultural resources.

2.3.2 Environmental Assessment (EA)

Table 2-1 lists specific NASA actions that require an environmental assessment. For these actions, project initiators shall proceed directly to the environmental assessment. The environmental assessment form and its contents must comply with the format and content required by NPR 8580.1. In addition to these actions, under the Council of Environmental Quality (CEQ) regulations, any action that is not specifically considered to require an EIS or which is not specifically a categorical exclusion, must be treated as environmental assessment-type activity. Table 2-3 lists the activities that are categorically excluded from the requirements for an EA.

If the environmental analysis indicates that the proposed action will have an impact (either adverse or beneficial) on the environment, an environmental assessment is required. The environmental assessment will evaluate the possible environmental impact in terms of its short and long-term significance. The complexity of an assessment will vary according to the subject matter and the significance of the impact.

The environmental assessment and the determination as to whether an EIS is required must be made **prior** to the decision to proceed from the conceptual study phase to the detailed planning/definition phase of the proposed action.

Once the environmental assessment is completed, it is then sent to NASA Headquarters for review and concurrence. **Early involvement by the EMT in preparation of the environmental assessment is imperative.**

If it has been determined that an EIS is not required, the EMT will prepare a "Finding of No Significant Impact" (FONSI) and coordinate the required review and approval in accordance with NASA NPR 8580.1. The FONSI will summarize the assessment and include reasons why an EIS is not required. Upon approval and signature from the LaRC Center Director, the FONSI is published in a local paper.

2.3.3 Environmental Impact Statement (EIS)

NASA actions expected to have a significant effect on the quality of the environment shall require an EIS. Table 2-2 is a listing of NASA actions that require an EIS. An environmental assessment is not required for these actions. When it has been determined that an EIS is required, a "Notice of Intent to Prepare an EIS" is also required. The EMT staff will coordinate the preparation and processing of the EIS in accordance with the provisions of NASA NPR 8580.1, and the provisions of the CEQ Regulations for Implementing the Procedural Provisions of NEPA (40CFR Parts 1500-1508). Table 2-3 lists the activities that are categorically excluded from the requirements of an EIS.

NASA Headquarters must agree that an EIS is or is not required for any major project at LaRC. The EMT will establish external and internal processing for each EIS on a case-by-case basis.

The final EIS shall be completed and distributed in accordance with the CEQ regulations prior to the decision to proceed from the detailed planning-definition phase to the development-construction phase (or implementation) phase of the proposed project or action.

2.4 RESPONSIBILITIES

2.4.1 Environmental Management Team

- Assist the project initiator as required.
- Serve as the point of contact for all required off-center coordination (NASA Headquarters, other Federal agencies, State, and local agencies).
- Process the EA or EIS in accordance with NPR 8580.1 to include the following actions:
 1. Coordinate internal review of the EA or EIS and plan for coordination with State, and local agencies or organizations.
 2. Coordinate review of the EA or EIS by other Federal, State, and local agencies, organizations, and interested parties.
 3. Provide for public availability of the EA and EIS and prepare responses to comments.
- Ensure that necessary actions are taken to meet the applicable requirements of environmental laws and regulations.

2.4.2 Project Initiator

- Coordinate with the EMT in identifying programs and projects that may affect the environment and activities related to environmental quality.
- Prepare, or fund the preparation of, the required NEPA documentation as described in this Chapter.
- Complete the NASA Langley Form 461, "NEPA Environmental Checklist" and forward to the EMT for review.
- Maintain project documentation as required in Paragraph 2.3.

Figure 2-1

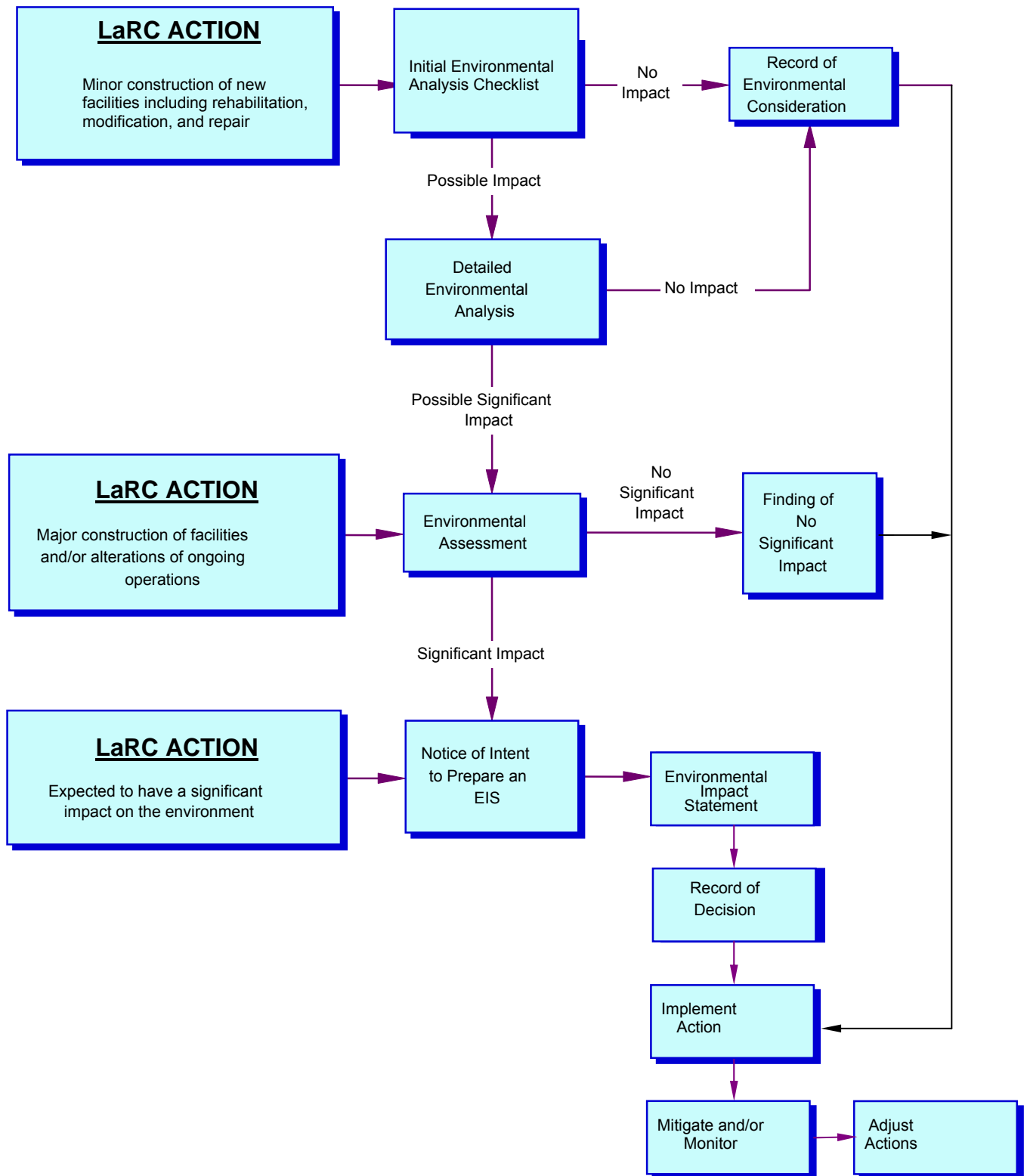
Overview of the NEPA Process

Figure 2-2

Record of Environmental Consideration (Example)

1. Project Title.
2. Description of proposed action.
3. Anticipated date and/or duration of proposed action.
4. It has been determined that the above action (choose one).
 - a. Is adequately covered in an existing EA _____ EIS _____
entitled _____ and
dated _____.
 - b. Qualifies for Categorical Exclusion # _____, (Table 2.3, LaRC Environmental
Manual) and has no special circumstances which would suggest a need for an
environmental assessment.
 - c. Is exempt from NEPA requirements under the provisions of
(site superseding law).
 - d. Has no environmental impact as indicated by the results of an Environmental
Analysis Checklist and/or a Detailed Environmental Analysis. (Attach Checklist
or Environmental Analysis as applicable).

SIGNED: _____ DATE: _____
(Office responsible for proposed action)

SIGNED: _____ DATE: _____
Head, Environmental Management Team, COD

*Table 2-1***LaRC Actions Requiring an Environmental Assessment****Specific LaRC actions which require an EA are:**

1. Specific spacecraft development and flight projects in space science.
2. Specific spacecraft development and flight projects in space and terrestrial applications.
3. Specific experimental projects in aeronautics and space technology and energy technology applications.
4. Development and operation of new space transportation systems and advanced development of new space transportation and spacecraft systems.
5. Reimbursable launches of NASA spacecraft or payloads.
6. Major Construction of Facilities projects.
7. Actions to alter ongoing operations at LaRC which could lead, either directly or indirectly, to natural or physical environmental effects.

*Table 2-2***LaRC Actions Requiring an Environmental Impact Statement****Specific LaRC actions which require an EIS are:**

1. Development and operation of new launch vehicles.
2. Development and operation of space vehicles likely to release substantial amounts of foreign materials into the earth's atmosphere or into space.
3. Development and operation of nuclear systems, including reactors and thermal devices used for propulsion and/or power generation. Excluded are devices with millicurie quantities or less radioactive materials used as instrument detectors and small radioisotope heaters used for local thermal control, provided they are properly contained and shielded.

Table 2-3

NASA EA/EIS Categorical Exclusions

The following activities are categorically excluded from the requirements for EA's and EIS's:

1. Research and Development (R&D) activities in space science (for example, physics and astronomy research and analysis, planetary exploration mission operations and data analysis) other than specific spacecraft development and flight projects.
2. R&D activities in space and terrestrial applications (for example, resource observations applied research and data analysis, technology utilization) other than specific spacecraft development and flight projects.
3. R&D activities in aeronautics and space technology and energy technology applications (for example, research and technology base, systems technology programs) other than experimental projects.
4. R&D activities in space transportation systems engineering and scientific and technical support operations, routine transportation operations, and advanced studies.
5. R&D activities in space tracking and data systems.
6. Facility planning and design (funding).
7. Minor construction of new facilities including rehabilitation, modification, and repair.
8. Continuing operations of a NASA installation at a level of effort, or altered operations, provided the alterations induce only social and/or economic effects, but no natural or physical environmental effects.

NOTE: Even though an action may be categorically excluded from the need for a formal environmental assessment or EIS, **it is not excluded from the requirement for an environmental analysis conducted during the earliest planning phases.** If that analysis shows that the action deviates from the criteria for exclusion and it is concluded that there may be significant environmental effects, an environmental assessment must be completed. Based on that assessment, a determination must then be made whether or not to prepare an EIS.

For more detailed flowcharts of NEPA guidance, refer to NPR 8580.1.

3 WATER QUALITY

3.1 GENERAL

The purpose of this section is to provide information on applicable regulatory requirements and procedures related to the Clean Water Act (CWA). The Clean Water Act regulates discharge of pollutants into waters of the U.S. from any point source including industrial facilities and sewage treatment plants. It also regulates storm water runoff from certain industrial sources and requires reporting and cleanup of oil and hazardous substance spills in waterways. The objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters". Section 313 (a) of the CWA requires Federal agencies to establish pollution controls. Under the CWA it is illegal for any person, including Federal agencies, to discharge pollutants from a point source without a permit. The Environmental Protection Agency has granted the Commonwealth of Virginia Water Control Board authority to issue these permits under the Virginia Pollutant Discharge Elimination System (VPDES). NASA LaRC has discharges from most all facilities onsite and must comply with all aspects of the CWA and VPDES for permitting.

3.2 REQUIREMENTS

NASA LaRC operates under three water discharge permits, one from the Hampton Roads Sanitation District (HRSD) and two from the State Virginia Pollutant Discharge Elimination System (VPDES). These permits limit the types and quantities of pollutants discharged, establish monitoring, and record keeping requirements. Any discharge not allowed under these permits is a violation of the CWA. To assess compliance with permit conditions the regulatory agencies conduct periodic inspections at the Center.

3.2.1 VPDES State Permits

VPDES Permit No. 0024741 allows LaRC to discharge effluent to surface waters and specifies the allowable discharges, the pollutant limitations, and the monitoring requirements. NASA LaRC has outfalls that are permitted to discharge industrial process waste water and storm water runoff. Information regarding monitoring locations and the permit authorized discharges can be obtained by calling the Environmental Management Team at extension 43500.

VPDES Permit No. VAR040092 is a general permit for Small Municipal Separate Storm Sewer Systems (MS4). This permit requires that NASA LaRC develop, implement and enforce a storm water management program to reduce the discharge of pollutants from the Center to the maximum extent practicable. LaRC's storm water management program must include minimum control measures as specified in the permit and best management practices must be implemented to meet the control measures.

3.2.2 HRSD Permit

HRSD Permit 0085 allows LaRC to discharge nonhazardous industrial wastewater and sanitary sewage to the HRSD sanitary sewer system. HRSD does not provide treatment for hazardous wastes. The HRSD Permit specifies the allowable discharges, the pollutant limitations, and monitoring requirements.

3.3 RESPONSIBILITIES

3.3.1 Facility Environmental Coordinators (FEC's)

- Have knowledge of materials used in their areas of responsibility and operations that may result in potential release of water pollutants.
- Be aware of permit requirements applicable to their facilities and act to prevent unpermitted discharges.
- Assist EMT by providing information and data required to comply with water permit requirements and compliance inspections.
- Contact the EMT at extension 43320 to determine alternative disposal options in situations where surface water or sanitary discharge is not permissible.
- Schedule periodic training to assure facility personnel are aware of the Center's water quality requirements and allowable discharges.

In the event of a permit violation, FEC's shall participate in the investigation to determine the cause of the discharge and recommend remedial action to prevent reoccurrence.

3.3.2 Environmental Management Team (EMT)

- Monitor and report as required by the permits and maintain all related files.
- Serve as the point of contact for LaRC with regulatory agencies. In the event of a permit violation, the EMT shall coordinate the investigation and submit findings to the permitting agency, as necessary.
- Approve or disapprove discharges from operations not included on the Center's water discharge permits to include on-site contractor operations.

3.3.3 Supervisory Personnel and Individual Employees

- Ensure that employees under their direction are aware of and comply with the water discharge permit requirements.
- Assist FEC's, as needed, with the preparation of the required information for permit applications and compliance inspections.

- All employees are responsible for complying with the Center's water discharge permits.

3.3.4 On-Site Contractors

Contracting Officer Technical Representatives (COTR's) shall ensure that any contractors working under them:

- Obtain approval from the EMT before the start of any operations that have discharges not covered under the Center's water permits.
- Comply with Center's water discharge permit requirements.
- Perform operations in a manner that prevents unpermitted water discharges.

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4 AIR QUALITY

4.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to air quality at NASA LaRC. Federal and state laws regulate air pollutant emissions from NASA Langley Research Center facilities and operations. The Clean Air Act of 1970 and its Amendments of 1990 set forth the requirements for air quality control programs. The objective of air quality control programs is "to protect and enhance the quality of the Nation's air resources so as to promote public health and welfare and the productive capacity of its population." The U.S. Environmental Protection Agency has granted the Commonwealth of Virginia Department of Environmental Quality (DEQ) authority for oversight and enforcement of Clean Air Act provisions.

4.2 REQUIREMENTS

4.2.1 NASA Langley Research Center Air Operating Permit

The Center has a federally enforceable, state operating permit for its stationary sources of air pollution. The permit limits emissions from specific sources of air pollutants as well as from the entire research facility. It also specifies operating, monitoring, and record-keeping requirements. To assess compliance with the permit conditions, DEQ conducts annual air inspections at the Center. A list of facilities regulated under the air permit is maintained by the LaRC Environmental Management Team (EMT) and is available by calling extension 43500.

4.2.2 Compliance Requirements of the Air Operating Permit

The air permit is designed to limit the quantity of air pollutants that NASA LaRC facilities and operations may emit. Specific permit requirements vary according to the air pollution source but they generally fall into four categories:

Physical:

- Requirement for air pollution controls to limit emissions. Examples include low NO_x burners on boilers and filters on paint booths.
- Requirement for monitoring equipment to measure emissions or process rates.

Operational:

- Limits on the amount of fuel burned or materials processed.
- Limits on frequency and duration of operations.
- Limits on the types and amounts of product that can be used, such as paints and solvents.

Record Keeping:

- Documents that physical and operational requirements are met.
- Documents the quantity of products, fuel, and materials used.
- Documents the frequency and duration of operations.

Reporting and Inspections:

- Requirement for Monthly and Quarterly Reports.
- Requirement for Annual Inventory and Emissions Statement.
- Allowance for periodic Compliance Inspections by DEQ.

4.3 RESPONSIBILITIES**4.3.1 Facility Environmental Coordinators (FEC's)**

- Know the facilities and operations in their areas of responsibility that are, or have the potential to be, sources of air pollution.
- Be familiar with the permitted sources of air pollution and the permit requirements for those sources.
- Notify the EMT prior to moving, changing, or installing an air emission source at his/her facility.
- Consult with the EMT to evaluate operations of concern and to ensure compliance with air pollution regulations and permit requirements.
- Provide data as required by the permit to the EMT in a timely manner for air emissions monitoring and inventory.

Whenever possible, sources of air pollution shall be minimized or eliminated through use of feasible engineering and administrative controls. Substitution of nonpolluting materials shall be considered.

4.3.2 Environmental Management Team (EMT)

- Monitor and report on air pollutant emissions and prepare air permit applications as required by regulatory agencies.
- Serve as the point of contact for LaRC for regulatory agencies regarding air emissions and permitting issues.
- Prepare and maintain emission inventories, summary reports, and a list of permitted air sources.

4.3.3 Supervisory Personnel and Individual Employees

- Ensure that employees under their direction are aware of and comply with the air permit requirements and emissions limits.
- Assist FEC's with the preparation of the required information for permit conditions, monthly monitoring, and annual updates.
- All employees are responsible for complying with the Center's air permit.

4.3.4 Logistics Management Team (LMT), Center Operations Directorate

- Provide the EMT with monthly reports on the amount and type of chemicals and the quantity of fuel issued from stock. Reports for the previous month will be provided to the EMT in a timely manner, but not later than five working days into the new month.

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5 WASTE MANAGEMENT & MINIMIZATION

5.1 GENERAL

The purpose of this Chapter is to provide information on regulatory requirements and procedures regarding the proper management of hazardous, non-hazardous and solid waste at NASA LaRC. The procedures comply with the many rules and regulations that have been established by the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the LaRC Environmental Management Team (EMT), and the Virginia Department of Environmental Quality (DEQ).

5.2 HAZARDOUS WASTE MANAGEMENT & MINIMIZATION

5.2.1 Background

LaRC is considered a large quantity generator of hazardous waste (HW) and is required to follow specific HW regulations. LaRC is not authorized to transport HW offsite, store HW beyond a 90-day accumulation period, or dispose of HW onsite. These functions can only be performed by appropriately permitted contractors. In addition, facilities and or personnel at LaRC can each be considered an actual or potential generator of HW.

Hazardous waste is identified and classified in accordance with 40 CFR Parts 260 and 261. HW is classified as either listed or characteristic HW, which includes waste generated from nonspecific sources, specific sources or processes, or from spills of hazardous chemicals. Regardless if a solid waste is a listed HW or not, it may be classified as a HW if it exhibits certain waste characteristics. These characteristics are identified as ignitability, corrosivity, reactivity, and toxicity. The toxicity characteristics are based on the presence of specific chemical constituents above chemical-specific concentration limits in the liquid portion, or leachate, of a solid waste using a standard test method such as the Toxicity Characteristic Leaching Procedure.

5.2.2 Requirements

The federal hazardous waste regulations originated in the Resource Conservation and Recovery Act (RCRA) of 1976. Regulation published by the Environmental Protection Agency (EPA) in response to RCRA established a “cradle to grave” hazardous waste concept. Under this concept, the generator of hazardous waste is ultimately responsible for that waste from the time it becomes a waste until it is properly disposed of or is no longer hazardous.

RCRA also requires that a generator of HW certify that a waste minimization program is in place as part of the biennial report for HW generators. This certification is a declaration that the generator has in place a program to reduce the volume and toxicity of waste generated to the degree that it is economically practicable.

The federal government authorizes the states to assume responsibility, or primacy, for the implementation and enforcement of the hazardous waste management programs, provided the states desiring to do so, establish hazardous waste management regulations at least as stringent as the federal requirements. The Commonwealth of Virginia incorporated the federal regulations with some exceptions in November 1980.

All LaRC personnel and on-site contractors who handle or oversee the handling of HW are required to follow the procedures outlined in this Chapter to ensure that LaRC complies with all applicable HW management regulations.

5.2.2.5 Satellite Accumulation Areas (SAA)

A Satellite Accumulation Area (SAA) is a specific location at a facility that is designated to accumulate HW (yellow label). Any person who oversees or manages a SAA, or who generates and accumulates HW at a SAA is called a generator. Below are specific requirements for managing a SAA.

- SAA's must be located at or near the point of waste generation and be under the control of the operator of the process generating the waste. HW from one SAA may not be moved to another SAA.
- No more than 55 gallons TOTAL of HW or one quart of acute HW can be accumulated at a SAA. Full containers, regardless of size, must be disposed of within 3 days. Acute wastes are specifically listed by the EPA. A copy of the list is available by calling the EMT at extension 44232.
- Each HW container located at a SAA must be marked with the words "Hazardous Waste" (yellow label) and the identity of the waste. NOTE: The Accumulation Start Date on the HW label does not get filled in until the container is FULL or the 55-gallon limit of HW is reached.
- Each container at a SAA must be closed at all times (unless adding waste), non-leaking, and compatible with the waste. Leave headroom to allow for expansion (3 inches for 55-gallon drum, 1-inch for 5 gallon).
- SAA inspections must be performed weekly and documented. An example inspection sheet is available at: <http://osemant1.larc.nasa.gov/cmts/hazwaste/>
- A one-page Spill Plan must be posted at each SAA and, where appropriate, there must be adequate spill supplies to clean up small spills or contain large spills (Facilities must purchase their own supplies). A facility-specific Spill Plan can be generated at: <http://osemant1.larc.nasa.gov/cmts/hazwaste/>.
- A HW container must be removed from a SAA in 3 days when the 55-gallon limit is reached or the container is full. The Accumulation Start Date starts the 3-day clock. (See Section 5.5 for disposal guidelines).

5.2.2.6 Universal Waste

EPA issued the universal waste rule to reduce the amount of hazardous waste items in the solid waste stream, encourage recycling and proper disposal of certain common or widely generated hazardous wastes, and reduce the regulatory burden on businesses that generate these wastes. 40 CFR Part 273 provides specific requirements for the management of universal wastes. The universal rule provides changes to the regulations regarding the management of *batteries* and *fluorescent light bulbs* as described below:

- They can now be labeled with a “Universal Waste” label (purple label).
- The start date is filled in when the waste *begins to be accumulated* (as opposed to the HW requirements of when the container is full).
- They can be accumulated for up to one year, at which point they must be shipped off site for disposal. In order for LaRC to meet this requirement, generators must have their batteries or bulbs picked up within 270 days of the start date to allow the Environmental Office sufficient time to ship them off site for disposal.

Aside from these changes, all other SAA management requirements still apply for Universal Wastes (e.g. annual training, drums closed and labeled).

5.2.3 Hazardous Waste Minimization

Waste minimization is required by the EPA. LaRC’s policy is to minimize the volume and toxicity of wastes generated at the Center. Source reduction, reuse, and recycling shall be utilized whenever possible. Additional information on waste minimization concepts can be found in Chapter 18, Pollution Prevention.

5.2.4 Training

All personnel who handle HW or oversee the accumulation of HW in their facility must have training on HW management procedures that are relevant to the position in which they are employed or tasks they are performing. The training must also include emergency response procedures and familiarization with equipment and systems where applicable.

NOTE: Training must be updated at least annually and whenever new or different hazards are introduced into the workplace. Training is offered by EMT and proof of this training (e.g., sign in sheet) must be kept on file by the FEC.

5.2.5 Hazardous and Non-Regulated Waste Disposal Procedures

Pre-labeled drums/containers are issued by the EMT with an identification number. The use of product drums is prohibited. The drums must stay at that facility and contain only the waste for which they were issued. Liquid and solid wastes shall not be mixed. The containers must be compatible with the waste, properly labeled, and contain only the

waste identified on the label. All containers/drums shall be in good condition and non-leaking. Call 5-DRUM to turn in empty product drums and request a properly labeled accumulation drum.

The Generator or Custodian of the waste is responsible for following proper waste disposal procedures. The following disposal procedures must be followed by all personnel, facilities, and on-site contractors.

LF 163 "Waste Material Data Sheet" must be used when disposing of waste. All information in Part 1 of LF163 must be completed. LF 163 are only available online and can be located at <http://hazwaste/>. Listed below are some examples of waste types that LF 163 must be utilized. Complete one form per waste type. Various sizes of the same waste types can go on one form. Trash disposal of items listed below is prohibited.

Acids / caustics	Any paints	Oil / lubricants
Adhesives	Light ballasts	Oily rags and water
Antifreeze	Mercury switches	Cylinders
Photographic fluids	Fuels	Small capacitors
Spill debris	Solvents	Used paint cans

LF 163 are not required to dispose of batteries, fluorescent light bulbs and aerosol cans. Disposal procedures for batteries, fluorescent light bulbs and aerosol cans are listed below:

- **Batteries:** All types of batteries must be accumulated in non-metallic containers labeled with a "Universal Waste" label. All terminals must be taped to prevent fire/sparks. Refer to Section 5.2.3, Universal Waste for labeling and accumulation procedures. Generators may request pickup electronically at: <http://osemant1.larc.nasa.gov/cmts/hazwaste/> or by calling 5-Drum.
- **Fluorescent Light Bulbs (FLB's):** Most FLB's are subject to regulation because they contain a small amount of mercury. All FLB's at LaRC must be accumulated and properly disposed of. In most cases, the LaRC lighting contractor will replace FLB's at Center facilities.

Facilities that change their own bulbs must accumulate them in their original box (to prevent breakage) and label "Universal Waste." Refer to Section 5.2.3, Universal Waste for proper labeling and accumulation procedures. Generators may request pickup electronically at: <http://osemant1.larc.nasa.gov/cmts/hazwaste/> or by calling 5-Drum.
- **Aerosol Cans:** *Full or partially full aerosol cans are considered hazardous waste and must be placed in a labeled HW accumulation container and managed in accordance with Section 5.5. Generators may request pickup electronically at: <http://osemant1.larc.nasa.gov/cmts/hazwaste/> or by calling 5-Drum.*

The State of Virginia allows for *completely empty* aerosol cans to be accumulated as nonhazardous waste which is exempt from SAA management requirements. Facilities must receive approval from the EMT at extension 44232 prior to accumulating their aerosols as nonhazardous. Placing a full or partially full aerosol can into a non hazardous accumulation container could result in a notice of violation and/or fine.

5.2.6 Responsibilities

5.2.6.1 Facility Environmental Coordinators (FEC's)

- Notify the EMT at extension 44232 prior to establishing or modifying a SAA in his/her facility.
- Implement SAA management procedures according to Section 5.3 and ensure that the Spill Plan is posted and weekly inspections are performed and maintained. Suggested inspection sheets and spill plans are available at: <http://osemant1.larc.nasa.gov/cmts/hazwaste/>.
- Ensure that his/her facility personnel follow the waste management and disposal procedures outlined in this chapter.
- Review and approval only complete Waste Material Data Sheets (WMDS) disposal forms.
- Ensure all personnel who handle or oversee the handling of HW obtain annual training and maintain training files.
- Update his/her facility chemical inventory using the CMTS according to the specifications in Chapter 19, Hazardous Materials Management.
- Assist facility personnel in minimizing hazardous waste.
- Perform other duties as specified in LAPD 8800.1, "LaRC Environmental Compliance, Restoration, and Pollution Prevention Program."

5.2.6.2 The Environmental Management Team (EMT)

- Oversee the Center's hazardous waste management operations.
- Review Transfer, Storage and Disposal Facility audit information.
- Prepare the HW Minimization and HW Generator Reports.
- Send a HW Minimization Report by April 31st of each year to the respective Organizational Unit Managers (OUM's). (The report provides a detailed list of all

waste streams that have been disposed of by the Organization during the past calendar year. The report may also include recommendations from the EMT.)

- Issue labeled waste accumulation containers and remove full hazardous waste containers within 72-hours of notification by the generator.
- Dispose of waste through a qualified off-site contractor in accordance with all Federal, State and local requirements.
- Provide periodic HW Management training to FEC's and facility personnel.
- Perform multimedia environmental audits of Center facilities to evaluate waste generation practices.

5.2.6.3 Facility Personnel and On-Site Contractors

- Follow the management and disposal procedures outlined in this chapter.
- Receive HW management training at least annually if you handle or oversee the handling of HW.
- Follow the Spill Plan procedures in the event of a small spill/ leak of HW. In the event of a large spill, immediately notify the FEC. No action should be taken which would endanger personnel.
- Contact the EMT at least two weeks before starting work on large waste-generating projects (e.g. lead paint removal, wash-down of tunnel walls). Failure to do so could result in work stoppage or additional costs.
- Purchase only what is expected to be used when ordering hazardous materials and determine if a less hazardous material can be used.
- Review operations to assure that they are conducted efficiently, reducing hazardous material use whenever possible.
- Follow proper waste segregation practices.

5.2.6.4 LaRC Offices and Organizational Units

- Review the HW Minimization Report and implement, where feasible, minimization procedures that will reduce their hazardous waste.
- Submit a response to the EMT by June 31st if recommendations from the EMT are included in the report.
- Request assistance from the EMT to initiate minimization plans and procedures at their facilities.

5.3 SOLID WASTE MANAGEMENT

5.3.1 Background

The Center manages solid waste through an integrated approach incorporating recycling, composting, energy recovery and landfilling. With the numbers of landfills diminishing and tipping fees are increasing annually efforts must now be made to minimize the amount of solid waste generated and disposed. The preferred hierarchy of solid waste reduction and disposal is source reduction, reuse, recycling, incineration, and finally landfilling. For additional information about recycling see Chapter 10.

5.3.2 Requirements

RCRA provides for regulation of solid waste in 40 CFR 240-246. The Hazardous and Solid Waste Amendments (HSWA) to RCRA enable regulation, including permitting, of Solid Waste Management Units (SWMU's) particularly where any possibility exists that such units were used for hazardous waste disposal. The RCRA regulations also provide for various means of recovering value from waste. Wastes may be recycled, reclaimed, used as a fuel supplement, or sold for profit. Executive Order 13101, "Greening the Government through Waste Prevention, Recycling, and Federal Acquisition," requires all Federal agencies to recycle.

5.3.3 Disposal Guidance

Only items that are allowed to be disposed of in a sanitary landfill shall be discarded in the trash cans and dumpsters at LaRC. The following items are some examples of what is allowed in a sanitary landfill:

- Garbage that is discarded material composed of animal, vegetable, or other organic material.
- Rubbish that is combustible and noncombustible materials.
- Refuse that is waste products having the character of solids rather than liquids, and composed of materials such as trash, garbage, and litter.

The following items are prohibited from being discarded in a sanitary landfill:

- Hazardous Material - A substance or material that has been designated under 49 CFR 171 and 173.
- Recyclable Items - A material that is being recycled on the Center. (see Chapter 10)
- Pesticide containers that have not been tripled rinsed and crushed.

- Excess material and equipment having resale or reuse value. (Contact the Logistic Management Team at extension 43570).

5.3.4 Responsibilities

5.3.4.1 Facility Environmental Coordinators (FEC's)

- Ensure facility personnel and contractors follow established non-hazardous waste management procedures.
- Educate facility employees about the non-hazardous solid waste management program or contact the EMT at extension 43500 to arrange for specific training.

5.3.4.2 Center Employees and Contractors

- Ensure that non-hazardous solid wastes are properly segregated and disposed of in accordance with the procedures contained in this Chapter.

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6 POLYCHORINATED BIPHENYL (PCB) MANAGMENT

6.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures regarding Polychlorinated Biphenyls (PCB's) and PCB containing equipment. It also outlines LaRC procedures for proper identification, management, and disposal of PCB and non-PCB items.

PCB's are a class of chlorinated hydrocarbons that were developed in 1929 and used in a variety of applications because of their chemical stability, low flammability, and low electrical conductivity. Use as a coolant in transformers, capacitors, and ballasts have been a major application. PCB fluids have been sold under various trade names, such as "Askeral," "Inerteen," "Chlorexol," "Noflama," and "Pyranol." Because of their extreme stability, they do not break down in the environment and tend to biomagnify through the food chain. Manufacturing of PCB's in the United States was discontinued in 1977.

6.2 REQUIREMENTS

PCB's are regulated under the EPA's Toxic Substance Control Act (TSCA). The regulations include procedures for proper labeling, storage, use, servicing, decontamination, and disposal of all fluids containing greater than 50 parts per million (ppm) PCB's; electrical equipment containing such fluids; and cleanup debris from spillage or leakage of such fluids. Items containing fluids that have a PCB concentration between 2 ppm and 50 ppm are considered non-PCB and are excluded from certain federal regulations with the exception of disposal practices.

Some facilities at the Center may still have PCB light ballasts or capacitors that have high levels of PCB's, or older electrical equipment that have very low levels of PCB's. Limited access areas containing large high voltage PCB capacitors (2,000 volts or greater) and individual PCB items must be posted with a large PCB sign. All PCB storage areas must also be posted. Items that have been retrofilled (fluids containing PCB's are removed and replaced with non-PCB fluid) shall be labeled with a non-PCB label. PCB signs and labels and a list of items that require labeling can be obtained by calling the LaRC Environmental Management Team (EMT) at extension 43500.

6.3 RESPONSIBILITIES

All LaRC and contractor personnel involved in the maintenance, use, and disposal of PCB items must follow the procedures in this section to assure compliance.

6.3.1 Custodian / Operator

Facilities System personnel shall serve as custodian or operator and perform the duties listed below. In the event that PCB items at a facility are not operated and maintained by Facilities System personnel, the Facility Environmental Coordinator (FEC) shall perform these duties:

- Label and post signs on each PCB item and area located at their facility. A list of items that require labeling can be obtained by calling the EMT at extension 43500.
- Periodically inspect transformers and large capacitors for leaks and proper storage.
- Contact the EMT for the following:
 - Sampling of possible PCB items located at their facility. Call extension 43394.
 - Procedures for removing any PCB items for disposal. Call extension 44232.
 - In the event of a PCB spill call the EMT PCB Spill Coordinator at extension 43320.

6.3.2 The Environmental Management Team (EMT)

- Provide PCB labels and signs to LaRC operators and custodians.
- In the event of a spill, serve as PCB Spill Coordinator and follow the procedures outlined in the LaRC PCB Management and SPCC Plan.
- Review/approve disposal requests and sign PCB shipping documents.
- Approve or reject the use of PCB disposal facilities.
- Manage the Center's PCB Storage Facility, Facility 1167 in accordance with LaRC waste management and TSCA requirements.
- Inspect all PCB items to ensure proper labeling and packaging prior to being placed in storage at Facility 1167.
- Perform sampling and analyses of PCB items as needed.

6.3.3 PCB Removal Contractors

Contracting Officer Technical Representatives (COTR's) shall ensure that any contractors working under them performing PCB removal operations shall:

- Notify the EMT prior to work involving the removal of equipment and items containing fluids with any concentration of PCB's.
- Conduct all PCB operations in accordance with applicable provisions of CFR 40 Part 761, Subparts A through K.
- Temporarily store PCB items (transformers, capacitors, etc.), for a period of time, not to exceed 30 days, from the date of removal from service. Storage shall be in accordance with EPA regulations CFR 40 Part 761.65 and coordinated with the EMT to assure proper storage practices. A notation shall be attached to the PCB item or PCB container housing which indicates the date of removal from service, its weight, and PCB ppm content.
- Package all PCB items for transportation according to applicable DOT regulations.

NOTE: All transformers and electrical equipment that have fluids containing any concentration of PCB's must be drained before being transported off the Center for disposal. The only exception to this is transformers or capacitors that can be contained without modification in a drum or other leak proof container. The EMT must be notified prior to draining any equipment to ensure that proper accumulation containers are used.

- At least five working days prior to transporting any PCB items or transformer oil off LaRC property, the following information must be submitted to the EMT:
 1. Name and location of the ultimate disposal facility. Only NASA LaRC approved facilities may be used for the disposal of PCB items. Disposal shall be in accordance with CFR 40 Part 761, Subpart D.
 2. A completed manifest that fulfills all requirements of CFR 40 Part 761.207 and CFR 40 Part 761.208. The EMT will review the manifest prior to approval and signature.

NOTE: Oil containing greater than 2 ppm PCB's shall be disposed of at incinerators or burners as defined in 40 CFR Part 761.20 (e) (1) or an at EPA-approved chemical treatment facility.

In the event of a spill:

1. Immediately notify the LaRC PCB Spill Coordinator at extension 43500. (During non-working hours, notify the Duty Officer at extension 44927).
2. Perform cleanup as required under CFR 40 Part 761, Subpart G.

All personnel, including supervisors involved with PCB spill prevention and cleanup shall be trained in accordance with Federal/State regulations.

A spill plan and spill supplies must be present on site at all times during operations involving any amount of PCB's.

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7 ENVIRONMENTAL REQUIREMENTS FOR CONSTRUCTION PROJECTS

7.1 GENERAL

This chapter provides information and procedures regarding the minimum environmental requirements for all construction projects performed at NASA LaRC. Construction projects addressed in this chapter include activities involving renovation, excavation and demolition at NASA LaRC.

7.2 REQUIREMENTS

All construction projects shall be conducted in accordance with this LPR 8800.1, Environmental Program Manual, NASA's SpecsIntact specifications, and all applicable environmental regulations. The SpecsIntact System is an automated, on-line system for preparing standardized facility construction specifications. The system is available at: <http://specsintact.ksc.nasa.gov/Index.asp>. These requirements are applicable to all LaRC personnel and contractors performing construction activities at NASA LaRC.

Construction projects must be coordinated with the LaRC Environmental Management Team (EMT) early in the planning stages. Specific requirements governing the preparation and review of assessments of the environmental impact of LaRC activities are contained in Chapter 2, National Environmental Policy Act (NEPA).

Construction projects at NASA LaRC shall include sustainable design and green building principles in accordance with E.O. 13123, Greening the Government Through Efficient Energy Management, and E.O. 13101. Sustainable design and green building principles call for buildings that are designed, constructed, renovated, operated and reused in a resource and energy efficient manner.

7.3 RESPONSIBILITIES

7.3.1 Environmental Management Team (EMT)

- Conduct a review of construction permits, plans, and specifications to ensure compliance with applicable regulations and requirements. Attend pre-construction meetings as requested.
- Coordinate with the Contracting Officer Technical Representative (COTR) regarding new equipment that may require environmental permits. Examples include but are not limited to: fuel-burning equipment, solvent degreasers, storage tanks, equipment discharging to the sewer or surface water, and paint booths. Prepare and submit permit applications as necessary.
- Coordinate with the COTR to determine if pre-construction and /or post- construction sampling is required.

- Review and/or sign waste manifests and shipping documents as required by the construction project.

7.3.2 Construction Contractors

Contracting Officer Technical Representatives (COTR's) shall ensure that any contractors working under them performing construction projects at LaRC shall:

Conduct project activities in a manner that protects water and air quality, conserves resources, and minimizes the use of toxic chemicals and hazardous materials. All contractor personnel must be appropriately trained regarding the safety aspects of work performed at LaRC.

Unless otherwise specified in the project specifications, obtain all necessary environmental and operating permits prior to performing any on-site work.

Where applicable, the following additional requirements apply:

Soil Excavation

- Perform soil excavation activities in accordance with NASA LaRC SpecsIntact Section 01011, "On-site Clean Up and Disposal of Materials."
- Coordinate with the COTR and the EMT to ensure that the appropriate sampling is performed prior to project startup. The number of samples and the sample parameters shall be determined according to the volume of soil excavated and the ultimate disposal facility requirements (e.g., local landfill).

NOTE: Soil that has not been sampled shall not be removed from LaRC without written approval from the EMT.

- Excavated soil that is stockpiled on LaRC property pending sampling and/or disposition shall be covered at all times.

NOTE: The requirements above do not apply to construction projects involving small-scale excavation. In most cases, an excavation is considered small when all excavated soil is to be returned to its original location. Examples of small-scale excavation include installation of fence posts, planting of shrubs, grounds maintenance, and underground pipe repairs. Where applicable, the EMT will make the determination of what constitutes a small-scale excavation.

Asbestos Removal

- Perform asbestos removal in accordance with NASA LaRC SpecsIntact Section 01060, "Disposal of Asbestos Waste," and Chapter 8, "Asbestos Management," of this document.

Transformer and Capacitor Removal

All large transformers and capacitors at LaRC that contained Polychlorinated Biphenyls (PCB's) have been either retrofilled or replaced with non-PCB items.

- Unless the transformer or capacitor can be containerized in a drum or other containment unit, all oils and fluids must be drained prior to removal from LaRC property.
- When applicable, perform transformer and capacitor removal operations in accordance with the NASA LaRC SpecsIntact Section 01060, "PCB Operations," and the procedures contained in Chapter 6, "Polychlorinated Biphenyl (PCB) Management" of this document.
- Coordinate, as needed, with the EMT to ensure the appropriate sampling has been performed prior to beginning removal operations.

Hazardous and Nonhazardous Wastes

Examples of wastes potentially generated from construction projects at LaRC include fluorescent lightbulbs, light ballasts, mercury switches, paints and solvents, and used oil.

- Manage all hazardous and nonhazardous wastes in accordance with the NASA LaRC SpecsIntact Section 01060, "Disposal of Hazardous Waste Material," and Chapter 5, "Waste Management and Minimization," of this document.
- Handle and store all hazardous and nonhazardous wastes in a manner that minimizes the potential for releases.
- All liquid hazardous materials and wastes must be secondarily contained and adequate spill response equipment shall be readily available.

Sustainability and Pollution Prevention

- Conduct activities in a manner that conserves resources and minimizes pollution in accordance with E.O. 13101, Executive Order 13123, Executive Order 13148 "Greening the Government Through Leadership in Environmental Management," and the Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds.
- Minimize the amount of energy required during construction and operation by using resource efficient construction techniques, building systems (including HVAC, heating, electrical, water, lighting, heat-pumps and boilers), insulation, fixtures, appliances, and controls.
- Whenever possible, utilize energy efficient office equipment through the Environmental Protection Agency's Energy Star labeling program (<http://www.epa.gov/energystar/>).

- Maximize the reduction, reuse, recycling or composting of construction and demolition waste and scrap materials.
- Follow federal EPA Comprehensive Procurement Guidelines (<http://www.epa.gov/epaoswer/non-hw/procure/>) for building materials and products, and select materials that have a long-life cycle; select least toxic materials; select recyclable materials; select materials that are resource-efficient; select materials with the maximum recycled content; select materials harvested on a sustained yield basis; select products causing the least pollution during their manufacture, use and reuse.

7.3.3 Contracting Officer Technical Representative (COTR)

- Ensure the EMT reviews project specifications for projects involving renovation, excavation and demolition.
- Coordinate with the EMT for pre-construction sampling as needed to evaluate the impacts of the project on the environment, provide for estimates of contaminated, volumes of materials and to assist in determining disposal options.
- Ensure that applicable SpecsIntact requirements are included in project specifications to ensure the project complies with associated environmental regulations.
- Monitor the construction contractor's actions to ensure compliance with project specifications and applicable environmental regulations.

8 ASBESTOS

8.1 GENERAL

This Chapter provides information and establishes procedures at LaRC for proper identification, management, and disposal of asbestos. The information is to be used in conjunction with the procedures contained in LPR 1740.2, "Facility Safety Requirements," Chapter 4.5, "Facility and Structures Safety, Asbestos," and with NASA LaRC SpecsIntact Section 01060, "Disposal of Asbestos Waste."

Asbestos is a naturally occurring family of fibrous mineral silicates. Prior to 1980, asbestos materials were incorporated into a variety of building materials (asbestos containing building materials or ACBM) because they exhibit commercially desirable properties such as fire resistance, insulation against heat, cold, noise and electricity, high tensile strength and acid resistance. Examples of ACBM include:

Sprayed or troweled on surfacing material	Ceiling tile
Pipe insulation	Roofing felts
Textiles	Floor tile and mastic
Concrete-like materials	Caulking putty and spackle

Since the late 1970's, manufacture and distribution of many types of asbestos containing materials have either been banned or fallen under more stringent regulation, although asbestos has been detected in building materials installed in the 1980's and 1990's.

ACBM can be divided into friable and non-friable categories. Friable materials can be crumbled, pulverized, or reduced to powder by hand pressure and are therefore more likely to release fibers when disturbed or damaged. Non-friable materials can also be a source of fiber release when cut, sanded or drilled.

The presence of asbestos in a building does not necessarily mean the health of the occupants is endangered. If asbestos-containing material remains in good condition and is unlikely to be disturbed, exposure will be negligible; however, when ACBM is damaged or disturbed, asbestos fibers can be released and present a potential health hazard to facility occupants.

LaRC does not remove or implement other abatement techniques simply because asbestos is present in a building. Removal or other abatement will be undertaken only if the condition of the asbestos is such that the health of facility occupants is jeopardized or the material will be disturbed by renovation or maintenance activities.

8.2 REQUIREMENTS

8.2.1 Regulations

Below is a brief description of agencies that regulate asbestos:

- The EPA regulates the emission of asbestos into the environment under three acts: the Clean Air Act (CAA), the Toxic Substances Control Act (TSCA), and the Federal Water Pollution Control Act (FWPCA).
- The Occupational Health and Safety Administration (OSHA) regulates the exposure of personnel to asbestos in general and construction industries involving renovation and demolition operations.
- The Commonwealth of Virginia Regulations parallel the Federal regulations but are more restrictive with regards to renovation notification requirements. State licensing of personnel involved with asbestos work (e.g. inspectors, abatement workers) is required for LaRC asbestos operations. Landfills that accept asbestos containing material must also be licensed by the State.

8.2.2 Asbestos Disposal

Although not considered hazardous waste under RCRA, disposal of friable asbestos waste is regulated under 40 CFR 61, Subpart M. Disposal is permissible only in state licensed landfills. Transportation of open containers of asbestos waste is prohibited under Department of Transportation Regulations (49 CFR Parts 173.216 and 173.240).

8.2.3 Configuration Management On-Line (CMOL)

Records of LaRC facilities that have friable ABCM are included in the Center's Configuration Management On-Line (CMOL) system, in the form of Asbestos Configuration Management Reports. The CMOL system is used by LaRC's Safety and Industrial Hygiene personnel, as well as FEC's and FSH's. Access to CMOL requires a user identification and password to obtain any documentation. The Asbestos Configuration Management Reports are used to document changes in ABCM condition, asbestos removal projects, and overall, to minimize exposure of facility occupants to asbestos. Additional information can be found in LPR 1740.4, "Facility System Safety Analysis and Configuration Management."

8.2.4 Posting and Labeling

Warning signs and labels are required to inform facility occupants of the presence of ABCM. Labeling and posting procedures can be found in OSHA's 29 CFR 1910.1101. Signs and labels are available from the LaRC Industrial Hygiene personnel at extension 43205.

8.3 RESPONSIBILITIES

8.3.1 Environmental Management Team (EMT)

- Review work requests involving asbestos removal and remediation.
- Arrange for asbestos disposal when appropriate.
- Review and sign asbestos manifests for both contractor and LaRC disposal.

8.3.2 Facility Safety Heads (FSH)

- Have access to the CMOL system if their facility has ACBM.
- Ensure asbestos materials/areas in their facilities are properly labeled and facility personnel are properly trained.
- Notify SFAO of changes to their facility's ACBM inventory or condition.

8.3.3 Safety and Facility Assurance Office (SFAO)

- Conduct inspections to identify ACBM and assess condition. Recommend remedial action as necessary; periodically re-inspect and reassess.
- Maintain ACBM location inventory and documentation in CMOL.
- Provide signs and labels to facility personnel.
- Approve Asbestos Safety Permits and contractor removal procedures.
- Monitor and inspect abatement operations as appropriate.

8.3.4 Research Operations, Maintenance, and Engineering (ROME)

- Use the CMOL system to maintain/access LaRC's ACBM location inventory.
- Review work requests, facility renovation/demolition plans, and other projects for asbestos involvement. Refer to SFAO as appropriate.
- Prepare Asbestos Safety Permits for asbestos work and forward to SFAO.
- Notify SFAO and FSH's of changes of ACBM inventory and condition.

8.3.5 Asbestos Removal/Abatement Contractors

Contracting Officer Technical Representatives (COTR's) shall ensure that asbestos contractors performing work under them follow the requirements listed below:

- Perform work in accordance with LPR 1740.2, "Facility Safety Requirements," Chapter 4.5, "Facility and Structures Safety, Asbestos," and with LaRC SpecsIntact Section 01060, "Asbestos Disposal."
- Submit job-specific procedures to the EMT at Mail Stop 418 before starting work. No work shall begin without prior approval from the EMT.
- Provide to the EMT the name and physical location of the disposal site. Only facilities approved by the State of Virginia may be used for asbestos disposal.
- Notify the appropriate regulatory agencies in accordance with 16VAC 25-20-30. Notification is required as follows:
 1. Twenty days prior to beginning work, notify the Virginia Department of Labor and Industry for operations that involve removal of 10 or more linear feet of friable thermal insulation or any other ACBM that becomes friable during handling
 2. Ten days prior to beginning work, notify the EPA for operations that involve the removal of 160 or more square feet of ACBM or 260 or more linear feet of ACBM.
- At least two days prior to shipment of asbestos off LaRC property, submit a completed asbestos waste manifest to the EMT at Mail Stop 418, Facility 1183, Room 110. (See example form at Figure 8-1.) The EMT will only sign complete manifests.

NOTE: Asbestos removed from LaRC removal/abatement sites remains Government property throughout the removal activity and shall be processed as such on the Waste Shipment Manifest.

- Transport the asbestos material off site in accordance with 40 CFR 173.216.
- Dispose of the asbestos in accordance with 40 CFR 61, Subpart M and state regulations.

Figure 8-1

EXAMPLE WASTE SHIPMENT MANIFEST

WASTE SHIPMENT RECORD				
BEFORE COMPLETING, CAREFULLY READ INSTRUCTIONS ON REVERSE				
Generator	1. Work site name and mailing address NASA LaRC MS 418 Bldg. 1183 Hampton VA		Owner's Name SAME	Phone No. (757) 864-4232
	2. Operator's Name and Address REMOVAL CONTRACTOR NAME & ADDRESS		Phone No.	
	3. Waste disposal site (WDS) name, mailing address, and physical site location DISPOSAL SITE ADDRESS		WDS Phone No.	
	4. Name and address of responsible agency COMMONWEALTH OF VA DEPT. OF AIR POLLUTION CONTROL P.O. BOX 10089 RICHMOND, VA 23240			
	5. Description of materials RQ ASBESTOS, 9, NA2212 (FRIABLE ASBESTOS) PGIII		6. Containers No. Type	7. Total Quantity (yd ³)
	IF Friable (enter required information in blocks 6 & 7) →		→	
	IF Non-Friable (check one): <input type="checkbox"/> Category I <input type="checkbox"/> Category II →		→	
	NOTE: Category I includes asphalt roofing products, resilient floor covering, packing, gaskets, BUT NOT TRANSITE. (See Instructions)			
8. Special handling instructions and additional information IF SPILLED, CONTAIN IMMEDIATELY; MUST WEAR RESPIRATOR AND PROTECTIVE CLOTHING.				
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.				
Printed/typed name & title LaRC Environmental Management Team		Signature	Month Day Year	
Transporter	10. Transporter 1 (Acknowledgment of receipt of materials)			
	Printed/typed name & title:		Signature	Month Day Year
	Address:			
	Phone:			
11. Transporter 2 (Acknowledgment of receipt of materials)				
Printed/typed name & title		Signature	Month Day Year	
Address and telephone no.				
Disposal Site	12. Discrepancy indication space			
	13. Waste disposal site Owner or Operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item #12.			
	Printed/typed name & title		Signature	Month Day Year

WHITE & BLUE - Transporter's Copy GREEN - Disposal Facility Copy YELLOW - Generator's Copy PINK - Generator's Copy
GOLDENROD - Generator's Copy (TO BE LEFT AT JOB SITE ON PICK-UP)

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9 ENVIRONMENTAL NOISE ABATEMENT

9.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to environmental noise abatement. Noise can be defined as any loud or undesirable sound. The loudness of a sound is measured using a logarithmic scale expressed in decibels (dB) and the measurement is further refined by using an A-weighted decibel (dBA) scale that emphasizes the range of sound frequencies that are most audible to humans. Zero on the decibel scale represents the lowest limit of human audible perception of sound. The level of normal conversation is approximately 60 dBA. Studies have shown that exposure to excessive and even moderate noise intensities for extended periods of time can cause irreparable damage to the human ear.

The aircraft operating from Langley Air Force Base (LAFB) are the dominant and most wide spread noise source at the Center. Noise levels at LaRC resulting from the LAFB flyovers typically range from 65 to 85 dBA. Primary noise sources located at LaRC include wind tunnels, compressor stations, and substations. Most of the wind tunnels are closed-loop, the noise generated is contained largely within the building, and many operate intermittently for short periods of time. Noise level surveys conducted on the various wind tunnels at LaRC during peak operating mode have identified noise levels ranging from 45 to 80 dbA.

9.2 REQUIREMENTS

The goal of the Noise Control Act of 1972 is to protect all Americans from noise that jeopardizes their health and welfare. This legislation was designed to establish noise standards and to regulate noise emissions caused by commercial products such as transportation and construction equipment. The Act also specifies that Federal agencies should comply with Federal, state, and local requirements regarding the control and abatement of noise. Military weapons and combat-use equipment are exempt from regulation.

Many state and local governments have developed their own environmental noise regulations as a result of the Quiet Communities Act of 1978. This statute amended the Noise Control Act by providing state and local governments with funds to promote the development of noise control programs on a local level, as long as the actions at the local level are consistent with Federal regulations.

The Occupational Safety and Health Administration (OSHA) Noise Standards establish regulations and guidelines for workplace noise pollution. The OSHA standards are 90 dB measured for a duration of 8 hours, 95 dB for 4 hours, 100 dB for 2 hours, and 140 dB maximum for impulse noises.

9.3 RESPONSIBILITIES

9.3.1 Facility Environmental Coordinators (FEC's)

- Know the facilities and operations in their areas of responsibility that are, or have the potential to be, sources of high noise levels.
- Consult with the LaRC Safety and Facility Assurance Office (SFAO) and as needed, the LaRC Environmental Management Team (EMT) regarding operations in their areas of responsibility that generate, or have the potential to generate, high noise levels.

9.3.2 Environmental Management Team (EMT)

- Provide guidance and feedback to Center personnel, as needed, regarding the control and abatement of environmental noise at LaRC.
- Serve as point of contact for regulatory agencies for projects or issues related to environmental noise control and abatement.

9.3.3 Safety and Facility Assurance Office (SFAO)

- Provide assistance as needed to the EMT regarding environmental noise issues at the Center.
- Perform additional responsibilities as defined in LPR 2710.1, "Langley Research Center Noise Control and Hearing Conservation Program."

9.3.4 LaRC Personnel

- All LaRC employees are responsible for seeing that noise levels are maintained at an acceptable level.
- Address concerns about environmental noise levels to the EMT at extension 43500.

10 RECYCLING AND AFFIRMATIVE PROCUREMENT (RAPP)

10.1 GENERAL

This Chapter provides information, procedures, and responsibilities regarding the recycling and affirmative procurement programs at NASA LaRC. The Environmental Management Team (EMT) keeps metrics on the quantity of materials collected, the funds recovered or disposal costs associated with recycling, in addition to information for purchasing environmentally preferable products. Funds collected from the sale of recycled goods are reinvested in the RAPP program or used to support the pollution prevention program. The LaRC recycling and affirmative procurement information homepage is located at <http://osemant1.larc.nasa.gov/rapp/>. The requirements of this chapter apply to all personnel and contractors performing work at LaRC.

10.2 RECYCLING PROGRAM

10.2.1 Background

The LaRC recycling program began in 1991 with the collection of mixed paper and scrap metal. LaRC currently recycles white and mixed paper, cardboard, toner cartridges, used oil, batteries, fluorescent light bulbs, scrap metal, precious metal, antifreeze, and used tires. A feasibility study was conducted in 2003 to identify possible future recycling programs for products such as aluminum cans, glass, and plastic. Recycling options for aluminum cans are currently being reviewed for possible implementation.

10.2.2 Requirements

Recycling at LaRC is mandated by E.O. 13101. E.O. 13101 requires federal agencies to establish a goal for solid waste diversion. LaRC is committed to reducing solid waste and diverting waste from landfills. The agency set a solid waste diversion rate of 25 percent by 2005 and a 35 percent diversion rate by 2010.

10.2.3 Management of Recyclable Items

10.2.3.1 White Paper

Collect white paper in the smaller blue containers provided by the EMT. When an individual container is full it must be emptied into the large **BLUE** container located at the facility's central collection area of your office or shop.

Central collection containers are emptied by the Environmental Support Contractor on a regular schedule or call-in basis, based on the building's generation rate (see website for schedule - <http://osemant1.larc.nasa.gov/rapp/>).

What is considered recyclable white paper?

RECYCLE THESE:

Computer Paper
White Letterhead
White Typing Paper
White Photocopy Paper

Fax Paper
White Memos
White Paper with colored ink

DO NOT RECYCLE THESE:

Food Wrappers or Cups
Laser Print Labels
Overheads
Paper of any color other than white

Who do I contact for a paper pickup? Call the recycling office at extension 48058.

10.2.3.2 Mixed Paper

The EMT does not currently provide small green containers. Collect mixed paper in a labeled designated container. When a container is full it must be emptied into the large **GREEN** container located at the facility's central collection area.

Central collection containers are emptied by the Environmental Support Contractor on a regular schedule or on a call in basis, based on the building's generation rate (see website for schedule; <http://osemant1.larc.nasa.gov/rapp/>)

What is considered mixed paper?

RECYCLE THESE:

Colored Paper
Glossy Paper
Post-it Notes
Manila Folders
Stapled Bounded
Catalogs/Magazines

DO NOT RECYCLE THESE:

Food Wrappers or Cups
Laser Print Labels
Carbon Paper
Overheads
Glue Bounded
Catalogs/Magazines
Newspaper

Who do I contact for a paper pickup? Call the recycling office at extension 48058.

10.2.3.3 Cardboard

Large Generators

Large generators of cardboard are those facilities that generate large quantities of cardboard on a regular basis, either weekly or bi-weekly. These facilities have special collection bins to accommodate the larger volume of cardboard.

Large generators must break down the cardboard and place it in the large collection bin. Facility Environmental Coordinators (FEC's) can make arrangements for a facility to receive a large generator collection bin or establish regular pickups by calling extension 48058.

Small Generators

Small or infrequent generators of cardboard are those facilities who occasionally have cardboard from supply or paper deliveries. Small generators must break down the cardboard and place it next to the recyclable paper collection bins. It will be picked up when paper is collected for recycling. See the paper pickup schedule on the recycling web page for more information.

Special Cardboard Pickup

Special cardboard pickup can be arranged for your facility by calling the recycling office at extension 48058.

What is considered cardboard?

RECYCLE THESE:

Corrugated Cardboard
(any color or thickness)

DO NOT RECYCLE THESE:

Paperboard (e.g., cereal boxes)

Cardboard with food
contamination (e.g., pizza
boxes)

10.2.3.4 Toner Cartridges

Used toner cartridges must be placed inside the "bag" and the box that the new replacement cartridge came in. The box must be taped closed. Used toner cartridges shall be placed next to the paper bins at the facility's central collection area.

For facilities with weekly paper pickup, your cartridges will be picked up when the paper is collected. For facilities that are on an on-call basis for paper pickup, call the on-site

recycling office at extension 48058 for a toner cartridge pickup. Allow three business days for cartridge pickup for on-call facilities.

10.2.3.5 Scrap Metal

Scrap metal shall be collected in separate containers designated as aluminum, copper and copper wire, mixed metals (including steel). Call extension 46339 for delivery and pickup of containers, or questions concerning scrap metal.

10.2.4 Responsibilities

As previously mentioned, LaRC is committed to reducing solid waste and hazardous waste from Center activities. Doing so is a joint effort between the EMT, the LMT, FEC's, and Center employees. Listed below are the responsibilities for each.

10.2.4.1 Environmental Management Team (EMT)

- Manage and oversee the Center's recycling program.
- Collect recyclable items in a timely manner throughout the Center.
- Prepare and mail monthly billing invoices to contractors.
- Act as the Center's official representative with government and private parties on recycling related matters.
- Track the Center's progress in meeting established goals.
- Provide support, guidance, training, and assistance to Organizational Units in implementing the recycling program in order to meet or exceed established goals.
- Collect monthly metrics on the recycling program and make these available to Center personnel on the recycling webpage through the EMT homepage.
- Seek out new items to recycle and new commodity markets to maximize proceeds to LaRC from the sale of LaRC recyclable materials.

10.2.4.2 Facility Environmental Coordinators (FEC's)

- Ensure facility personnel follow established procedures.
- Post copies of the relevant recycling procedures and updates in a prominent location and/or near recyclable material collection areas.
- Monitor recycling collection areas and arrange for pickup, if necessary. Ensure collection containers are not contaminated with non-recyclable materials.

- Educate facility employees about the recycling program or contact the EMT at extension 48058 to arrange for specific training.
- Inform the EMT of additional items that could be recycled or suggest improvements for the Center's recycling program.

10.2.4.3 Logistics Management Team (LMT)

- Provide day-to-day management of the collection of scrap metal, tires, precious metals and antifreeze.
- Remove scrap metal from facilities in a timely manner.
- Provide EMT with monthly detailed estimates of usage categories for each metal collected.
- Provide technical assistance to Center personnel.
- Receive training on LaRC's recycling procedures.
- Monitor recycling activities to ensure compliance with established recycling procedures.
- Provide copies of the scrap metal delivery order tickets to the EMT within three working days of each month.
- Maximize the collection of these recyclable materials and maximize the proceeds to LaRC from the sale of the recyclable materials.

10.2.4.4 LaRC Employees and Contractors

- Participate in the LaRC recycling program.
- Keep abreast of the Center's recycling program information that is distributed by the FEC or on the EMT recycling homepage <http://osemant1.larc.nasa.gov/rapp/>.
- Ensure collection containers are not contaminated with non-recyclable materials.
- Inform the FEC or the EMT of additional items that could be recycled or improvements for the Center's recycling program.
- Attend facility training on LaRC's recycling procedures.

10.3 AFFIRMATIVE PROCUREMENT PROGRAM

10.3.1 Background

Affirmative procurement is the process of purchasing environmentally preferable products. Affirmative procurement procedural requirements state the government and its contractors are to purchase recycled content, environmentally preferable, and biobased products to the maximum extent possible in order stimulate their use. Environmentally preferable products are products and services having a lesser or reduced effect on human health and the environment when compared to competing products or services serving the same purpose. In addition, the government and its contractors should promote the purchase of biobased products, which are commercial or industrial products, other than food or feed, which utilizes biological products or renewable domestic agricultural (plant, animal and marine) or forestry materials.

10.3.2 Requirements

In Section 6002 of the Resource Conservation and Recovery Act (RCRA), Congress directed the federal government to promote recycling by increasing its purchases of products containing recovered materials. RCRA requires EPA to designate products that can be made with recovered materials and to recommend practices for buying these products. A list of EPA designated products can be found at <http://osemant1.larc.nasa.gov/rapp/>. Affirmative procurement requirements are found in FAR Part 23, Subpart 23.4, Use of Recovered Materials.

E.O. 13101 directs federal agencies to implement acquisition programs aimed at encouraging new technologies and building markets for environmentally preferable and recycled products.

E.O. 13134 extends federal procurement activities related to biobased products and services.

NPR 8830.1, Affirmative Procurement Plan for Environmentally Preferable Products, establishes the framework for NASA's affirmative procurement program for items with recovered material content. It requires each Center to develop and implement an affirmative procurement program in conformance with RCRA Section 6002. The procedural requirement assigns responsibilities and describes implementation and reporting requirements to be followed by each Center.

10.3.3 Responsibilities

Based on NASA requirements and other regulations, NASA LaRC employees and contractors have the following responsibilities to fulfill pertaining to purchasing items with recycled or recovered material content.

10.3.3.1 Environmental Management Team (EMT)

- Understand the requirements of E.O. 13101 and the objectives of the NPR 8830.1. Be knowledgeable of the EPA designated materials list and the Request for Waiver process.
- Develop and implement an affirmative procurement awareness program. NASA LaRC shall establish the affirmative procurement program for all designated EPA guideline items purchased. Newly designated items shall be incorporated into the affirmative procurement program within one year from the date EPA designated the new item.
- Advise procurement originators and contracting officers on acquisition strategies for environmentally preferable products and services including updates to the list of EPA's designated items.
- Review and approve Request for Waiver documentation and participate in Life-Cycle Cost and Life-Cycle Analysis (LCC and LCA) activities.
- Compile the Center's Annual Affirmative Procurement Progress Report.
- Provide support, guidance, and assistance to the Center in interpreting and implementing the EPA and applicable Agency guidelines for recovered materials.

10.3.3.2 LaRC Personnel and Contractors

- Understand the requirements of E.O. 13101 and the objectives of the NPR 8830.1. Be knowledgeable of the EPA designated materials list and the Request for Waiver process.
- Consult early in the procurement process with appropriate parties (e.g., environmental specialists, contract specialists) to facilitate the process of procurement planning, which include LCC and LCA.
- Utilize statements of work or specifications which include elimination of virgin material requirements, reuse of products, use of recovered materials, energy and water efficiency, recyclability, and the use of designated items included in the CPG or other environmentally preferable products or services.
- Prepare Request for Waiver or justification for concurrence signature by the EMT if the guideline item is not available competitively, within a reasonable time frame, does not meet appropriate performance standards, or is only available at an unreasonable price.

10.3.3.3 Center Operations Directorate

- Understand the requirements of E.O. 13101 and the objectives of the NPR 8830.1. Be knowledgeable of the EPA designated materials list and the Request for Waiver process.
- Review specifications and amend the specifications, as appropriate, to encourage the use of recovered materials.
- Ensure that construction products are procured with recovered content levels as specified in Part C - Construction Products of NPA's Recovered Materials Advisory Notice.
- Collect and compile the necessary data and information in a timely manner and provide to the EMT to facilitate the process of procurement planning for the annual Affirmative Procurement Report and other required reports.

10.3.3.4 Office of Procurement

- Understand the requirements of E.O. 13101 and the objectives of the NPR 8830.1. Be knowledgeable of the EPA designated materials list and the Request for Waiver process.
- Ensure that the acquisition of products and services covered by applicable EPA guidelines are conducted in accordance with the requirements RCRA, E.O. 13101, the FAR, and NASA.
- When identified by technical personnel, statements of work or specifications shall include: elimination of virgin material requirements, use of recovered materials, reuse of products, life cycle analysis, energy and water efficiency, recyclability; and the use of EPA designated items or other environmentally preferable products. These factors should be considered in acquisition planning for all procurements and in the evaluation and award of contracts, as appropriate.
- Collect and compile the necessary data and information in a timely manner and provide to the Environmental Management Team to facilitate the process of procurement planning for the annual Affirmative Procurement Report and other required reports.
- Provide guidance and facilitate acquisition planning with respect to environmentally preferable goods and services, including those available through Federal sources of supply.
- Assist in any market research necessary to determine the availability of environmentally preferable goods and services.
- Ensure that solicitations and contracts contain the appropriate provisions and FAR Part 23 clauses to implement Affirmative Procurement.

- Review and revise specifications, product descriptions, and standards and commercial item descriptions during the acquisition planning stage to enhance NASA's procurement of recycled and environmentally preferable products.
- Ensure that contracts, grants, and cooperative agreements include provisions that require documents to be printed double-sided on recycled paper meeting or exceeding the standards established in EPA guidelines.
- Consult with the technical point of contact and modify existing qualifying contracts (see FAR Part 23, Subpart 23.405) which do not have FAR Part 23, Subpart 23.4 clauses implementing Affirmative Procurement.

11 WETLANDS

11.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to wetlands at NASA LaRC. Wetlands are defined as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

NASA LaRC is located in an area of low topographic relief surrounded by a shallow estuarine environment. The predominant wetland areas in the vicinity of LaRC are the tidal marsh wetlands associated with Brick Kiln Creek and Tabbs Creek.

11.2 REQUIREMENTS

Section 404 of the Clean Water Act requires a permit from the U.S. Army Corps of Engineers (ACOE) for all activities involving dredging or filling of U.S. waters, including wetlands. The EPA is the permitting authority and the U.S. Fish and Wildlife Service (USFWS) is a reviewing agency.

Executive Order 11990 requires each Federal agency to “take action to minimize the destruction, loss, or degradation of wetlands, unless there is no practicable alternative, and then the proposed action must include all practicable measures to minimize harm to wetlands.” Federal agencies must provide an opportunity for early public review of any plans or proposals for new construction in wetlands.

NASA regulations on wetlands management specified in 14 CFR 1216.2, require NASA Centers to include wetland protection in their master planning activities and consult with the ACOE, USFWS and FEMA.

The Virginia Wetlands Act (Chapter 13, Title 28.2-1300 through 28.2-1320) requires a permit from the Virginia Marine Resources Commission (VMRC) for any activity that would use or develop a tidal wetland.

11.3 RESPONSIBILITIES

11.3.1 Environmental Management Team (EMT)

- Maintain an accurate inventory of all Center wetlands, including maps and appropriate descriptions.
- Serve as point of contact with external regulatory agencies regarding wetlands issues at LaRC.

- Validate the need for permit applications.
- Prepare wetland permit applications and maintain wetlands permits on file.
- Coordinate with Integrated Asset Management Team, Center Operations Directorate, for inclusion of wetland inventories into the Center Master Plan.

11.3.2 Research Operations, Maintenance, and Engineering (ROME)

- Review all proposed projects to determine if activities may affect wetlands.
- Complete an environmental permit checklist and environmental analysis checklist for each proposed action.
- Coordinate with the EMT for wetland permit applications.

11.3.3 Organizational Units

- Personnel initiating projects shall coordinate proposed actions affecting wetlands with the EMT prior to project development.

11.3.4 Integrated Asset Management Team, Center Operations Directorate

- Provide information for permit applications as required.

12 ENDANGERED AND THREATENED WILDLIFE AND PLANTS

12.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to endangered species at NASA LaRC. Many species of terrestrial wildlife have become rare or endangered within the Virginia peninsula due to continuing intensive development. Of major concern are the reptiles and amphibians that are unable to immigrate to undisturbed areas because of the topographic nature of the area, a peninsula, and their limited mobility.

12.2 REQUIREMENTS

The Endangered Species Act of 1973 (16 U.S.C. 1531 through 1543) was enacted “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved and to provide a program for the conservation of such endangered species and threatened species.” The Act states “all Federal departments and agencies shall seek to conserve endangered species and threatened species and utilize their authorities in furtherance of this Act.” In addition to the Endangered Species Act of 1973, 50 CFR 17.11-12, implemented in 1983, addresses endangered and threatened wildlife and plants and provides a listing by name.

12.3 ENDANGERED AND THREATENED SPECIES IN OR NEAR NASA LaRC

Old Dominion University (ODU) conducted fish, wildlife, and plant surveys facility-wide in 1995. The general findings are included below. A more detailed listing of the endangered and threatened species at NASA LaRC can be found in Chapter 6 of the Environmental Resource Document which is available by calling the Environmental Management Team (EMT) at extension 43500. The ODU study is also available through the EMT.

12.3.1 Reptiles and Amphibians

Sixteen species of reptiles and amphibians were identified from NASA LaRC and 19 additional species should occur in the area, but were not encountered during the study. One reptile, the canebrake rattlesnake (*Crotalus horridus atricaudatus*) is listed by the State as an endangered species. The Federal Government lists the Kemp's Ridley sea turtle as a Federal endangered species. A third species, the Eastern glass lizard (*Ophisaurus ventralis*), is listed on the State list as a threatened species. In addition, three northern diamondback terrapins (*Malaclemmys terrapin terrapin*), a Federal species of concern, were captured, identified, and released (ODU, 1995).

12.3.2 Mammals

Fourteen species of mammals were encountered at NASA LaRC during the ODU survey, and 12 additional species are expected to occur. None of these mammals are listed as threatened or endangered; however, three of the species found to inhabit NASA LaRC are listed as species of special concern by the Commonwealth of Virginia--the river otter (*Lutra canadensis*), the marsh rabbit (*Sylvilagus palustris*), and the small star-nosed mole (*Condylura cristata parva*).

12.3.3 Birds

A total of 118 species of birds were observed at NASA LaRC during the survey. Of these, 7 are listed as threatened or endangered by the State or Federal government and 17 more are listed as species of special concern in the Commonwealth of Virginia. The bald eagle (*Haliaeetus leucocephalus*), gull-billed tern (*Sterna nilotica*), and the Henslow's sparrow (*Ammodramus henslowii*) were determined to be transient migrants who use the NASA LaRC facility solely as a foraging stop. The northern harrier (*Circus cyaneus*), brown creeper (*Certhias americana*), winter wren (*Troglodytes troglodytes*), hermit thrush (*Catharus guttatus*), and the purple finch (*Carpodacus purpureus*) have the potential to nest at NASA LaRC, though currently none of them do. In addition, the brown pelican (*Pelicanus occidentalis*), least tern (*Sterna antillarum*), and great egret (*Ardea alba egretta*) are unlikely to nest at NASA LaRC due to lack of suitable nesting habitat.

12.3.4 Finfish

Thirty-three finfish species were collected at NASA LaRC during the ODU study. All species were common to the lower Chesapeake Bay and its tributaries. No endangered, threatened, or special concern species inhabit or use the NASA LaRC community.

12.3.5 Plants

No plants listed as threatened or endangered were found in any of the habitat types at NASA LaRC.

12.4 RESPONSIBILITIES

12.4.1 Environmental Management Team (EMT)

- Monitor updates and/or changes to endangered and threatened wildlife and plant listings to determine if LaRC is impacted.
- Update findings in the LaRC Environmental Resources Document.
- Assist the project initiator as required with issues related to endangered and threatened wildlife and plants.

- Serve as the point of contact with external regulatory regarding endangered and threatened species issues at LaRC.

12.4.2 Project Initiator

- Coordinate with the EMT early in the project development for activities that could potentially affect endangered and threatened wildlife and plants.
- Prepare, or fund the preparation of, endangered species surveys or studies as directed by the EMT.

13 ENVIRONMENTAL PLANNING FOR ANNUAL FACILITY MAINTENANCE

13.1 GENERAL

The purpose of this Chapter is to provide information on applicable regulatory requirements and procedures related to annual facility maintenance at LaRC.

13.2 REQUIREMENTS

Facility maintenance must be planned carefully so that Federal, State, and NASA environmental regulations and requirements are consistently met during facility shutdown and startup phases. Specific requirements regarding the different environmental laws and regulations that may apply to facility maintenance operations are detailed in the different chapters of this LPR according to environmental media area.

13.3 RESPONSIBILITIES

Contracting Officer Technical Representatives (COTR's) shall ensure that contractors performing facility maintenance under them comply with the following requirements:

13.3.1 General Maintenance Activities

- Identify oil or liquid waste discharges before the startup or shutdown of a unit. The EMT must be notified by personnel performing the startup or shutdown to ensure that the discharges are handled properly.
- Review maintenance plans to ensure that the liquid waste is disposed of in accordance with environmental regulations.
- Notify the EMT of any special procedures, decontamination, and analyses to be sure that the activity will not impact the environment.

13.3.2 Specific Maintenance Activities

- Asbestos Containing Material – The maintenance coordinator shall provide information to the SFAO and the EMT as described in Chapter 8 of this Manual.
- Effluents Management - Contact the EMT at extension 4-3320 prior to discharging any materials generated from maintenance activities. No discharges shall be made to the environment through the sanitary and storm sewers or open dumping on the ground without approval from the EMT. Chapter 3 discusses the Center's Water Program in detail.

- **Used Oil** – Conduct an oil analysis prior to removal of used oil from equipment to ensure the oil is changed only if it no longer meets specification requirements. Used oil shall be transferred to an appropriately marked "Used Oil" drum. Chapter 10 discusses oil management in detail.
- **Oily Water** – Notify the EMT prior to generation of oily water to ensure that the oily water can be disposed of or processed through the oily water separator in a timely manner. The EMT will discuss options with the generator to reduce the oily water generation when necessary.
- **Air Pollution Control** – Contact the EMT at extension 43500 prior to installing a new source or moving any permitted air sources. See Chapter 4, Air Quality, for more detail.
- **Waste Generation** – Notify the EMT prior to beginning work if the maintenance activity will generate waste. This will allow the EMT to prepare for proper disposal of the waste (e.g., sampling, waste characterization).
- **Waste Management** – Plan ahead of time for proper management of any wastes generated during the maintenance activity. All wastes must be accumulated and disposed of in accordance with the procedures described in Chapter 5.

14 OIL AND HAZARDOUS MATERIAL SPILL CONTROL

14.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to oil and hazardous material spill control at LaRC. Implementing engineering and administrative controls in order to minimize spill potential is an important goal for the Center. The Center's Hazardous Materials Spill Contingency Plan, and its Oil Spill Prevention Control and Countermeasure (SPCC) Plan have been combined into one document called the NASA LaRC Integrated Spill Contingency Plan (ISCP). The Plan is available by contacting the LaRC Environmental Management Team (EMT) at extension 43500.

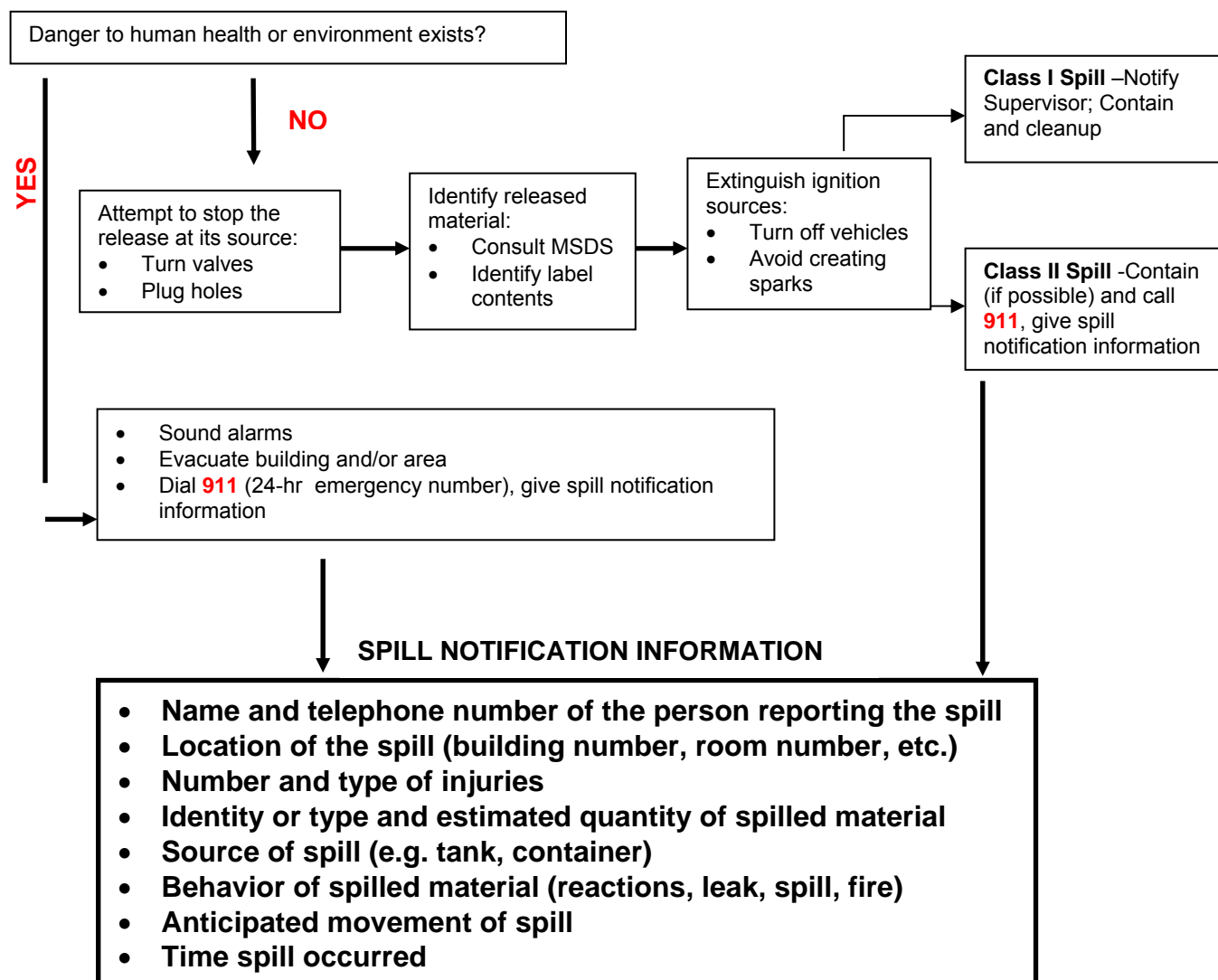
14.2 REQUIREMENTS

Spill prevention, control and contingency plans are required by several laws and regulations to include:

- EPA's Oil Pollution Prevention Regulations (SPCC and Facility Response Plan Requirements) – 40 CFR Part 112.7 and 112.20-21
- EPA's Resource Conservation and Recovery Act (Contingency Planning Requirements) – 40 CFR Parts 264 and 265, and 40 CFR 279.52
- National Oil and Hazardous Substance Pollution Contingency Plan – 40 CFR Part 300
- EPA's Emergency Planning and Community Right-to-Know Act (EPCRA) – 40 CFR Part 355
- OSHA's Hazardous Waste Operations Emergency Response (HAZWOPER) Regulations – 29 CFR 1910.120
- Virginia State Water Control Board Regulations 9VAC25

14.3 SPILL RESPONSE

A spill can be detected by visual inspection by personnel, or by automated detection systems such as with underground storage tanks. Immediate action is necessary in the event of an oil or hazardous material spill of any size. Any LaRC personnel or on-site contractors that discover a release of material from a container, tank, or operating equipment shall respond according to the following decision tree:



14.4 SPILL CHARACTERIZATION

• Class I Spill

A Class I spill is relatively small in volume and presents low hazard potential to personnel or the environment. It can be contained and cleaned up with only minor difficulty by the user/custodian. Outside support is not necessary. A class I Spill results in:

- No discharge of oil or hazardous materials to adjacent waters at LaRC and no violation of applicable water quality standards
- No sheen upon or discoloration of surface waters at LaRC

- A release of material that is *below* the Hazardous Substance Reportable Quantity

- **Class II Spill**

A Class II spill involves a large volume of material and may present significant hazard to personnel or the environment. Any spill reportable under EPA Regulations, 40 CFR302, 355, or 372 shall be considered a Class II spill. A class II Spill results in:

- Discharge of oil or hazardous materials to adjacent waters at LaRC and/or is a violation of applicable water quality standards
- Discoloration of or sheen upon surface waters at LaRC
- Amount of released material is above the Hazardous Substance Reportable Quantity

Other than initial containment, area control and notifications, full-scale containment and clean up of a Class II spill shall be conducted in accordance with the NASA LaRC Integrated Spill Contingency Plan.

Operations in which a Class II spill may occur, shall be conducted under a Potentially Hazardous Materials Safety Permit as provided for under LPR 1710.12. The Safety Permit shall identify spill potential and specify appropriate response.

14.5 RESPONSIBILITIES

Most spills are caused by equipment failure or operational errors. Spills can be minimized by implementing practicable and good engineering practices such as employee training, appropriate personnel selection, regular equipment maintenance and inspections. Should a spill occur, the following procedures and responsibilities apply:

14.5.1 Facility Environmental Coordinators (FEC's)

- Oversee proper management of each oil and/or hazardous materials storage site at his/her facility.
- Ensure that facility personnel are aware of the oil and/or hazardous materials storage areas at his/her facility and that appropriate personnel are familiar with spill control and response procedures.

14.5.2 Environmental Management Team (EMT)

- Notify regulatory agencies of spills as required by the Federal spill response reporting requirements (See Chapter 15, Emergency Planning and Community Right to Know).

- Maintain complete documentation for all Class II spills and for Class I spills of unusual nature.
- Conduct investigations into the causes of the incident and submit recommendations to prevent reoccurrence.
- Coordinate disposal of hazardous waste generated by spills.
- Participate in spill events as specified in the NASA LaRC Integrated Spill Contingency Plan.

14.5.3 User/Custodian

The primary responsibility for spill prevention lies with the user/custodian. Actions taken in the event of a spill shall be preplanned and incorporated into use procedures. The user/custodian shall:

- Ensure that all drain lines are plugged that are near indoor oil or hazardous materials storage areas. This includes Hazardous Waste Satellite Accumulation Areas (SAA's).
- Use spill containment pallets for any oil or hazardous materials stored outside of the facility.
- Post a Spill Plan at each outside site that contains 220 gallons (4 x 55-gallon drums) or more of oil and/or hazardous materials. Examples of a Spill Plan can be obtained at:
http://osemant1.larc.nasa.gov/cmts/hazwaste/spill/spill_response.htm
- In the event of a spill, follow the decision tree shown in Section 14.2.
- Ensure that spill debris is disposed of properly (See Chapter 5, Waste Management).

15 EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT

15.1 GENERAL

The purpose of this chapter is to provide information to LaRC personnel on the regulatory requirements and procedures of the Emergency Planning and Community Right-To-Know Act (EPCRA). EPCRA was enacted in October 1986 in response to a growing concern about the effect of chemical releases on communities. EPCRA encourages and supports emergency planning efforts at the state and local level, and provides citizens and local governments with information concerning potential chemical hazards present in their communities. LaRC must comply with all sections of EPCRA as stated by Executive Order 13148.

15.2 REQUIREMENTS

15.2.1 Emergency Planning Notification

EPCRA Sections 301-303 require that facility owners or operators notify the State Emergency Response Committee (SERC) if their facility qualifies as an Emergency Planning Facility. The criteria for qualification is any facility that has on site, at any given time, a quantity of an Extremely Hazardous Substance (EHS) that is equal to or greater than its threshold planning quantity (TPQ). The facility must notify the SERC within 60 days of first meeting this qualification.

The list of EHS's and TPQ information can be obtained at the following website:
<http://www.epa.gov/ceppo/pubs/title3.pdf>

An Emergency Planning Facility must designate a Facility Emergency Coordinator and provide the name of that individual to the Local Emergency Planning Committee (LEPC) or the SERC if there is no established LEPC.

15.2.2 Spill Reporting

EPCRA Section 304 requires that the owner or operator of a facility must notify the appropriate authorities in the case of an accidental release of an EHS or CERCLA-defined hazardous substance equal to or greater than its reportable quantity (RQ). The consolidated chemical list that includes chemicals subject to reporting requirements under EPCRA is available at the following website:
<http://www.epa.gov/ceppo/pubs/title3.pdf>

This notification must be made immediately by the owner or designated representative. See Chapter 14 for procedure information on spills and reporting.

As soon as possible after the release, EPCRA requires a written follow-up report for any release that requires immediate notification to the SERC and the LEPC.

15.2.3 Inventory Reporting

Facilities that have hazardous chemicals are required by the Occupational Safety and Health Act (OSHA) to maintain Material Safety Data Sheets (MSDS's) for the hazardous chemicals. EPCRA Sections 311-312 require the owner or operator of these facilities to:

- Submit MSDS's or a list of MSDS chemicals within 90 days from the day the facility first has on-hand the threshold quantities, and
- Submit annually (by March 1) a hazardous chemical inventory form (Tier II report) to the SERC, LEPC, and the local Fire Department that has jurisdiction over the facility.

15.2.4 Toxic Release Inventory

EPCRA Section 313 also requires a Toxic Release Inventory (TRI) report of releases of toxic chemicals from facilities that manufacture, process, import or otherwise use a listed toxic chemical in excess of specific threshold quantities. A Form R for all chemicals exceeding threshold quantities must be submitted by July 1 to the appropriate Federal (the EPCRA Reporting Center), State (VA DEQ), and local (HRSD) organizations.

15.2.5 Priority Chemical Reduction

Executive Order 13148 requires Federal agencies to reduce their use of "priority" listed EPCRA Section 313 toxic chemicals and other regulated hazardous substances and pollutants for identified applications by 10 percent annually or by 50 percent by December 31, 2006. A draft list of these chemicals was compiled based on their significant harm to human health and/or the environment, and the availability of known substitutes for their designated use applications. Out of approximately 15 chemicals, the Center uses only three of the "priority" chemicals in significant amounts: lead, mercury and silver. The Center will focus on reducing the use of these chemicals where feasible. A complete list of draft chemicals can be found in the CY 2004 Pollution Prevention/Sustainability Plan Update.

15.3 RESPONSIBILITIES

15.3.1 Environmental Management Team (EMT)

- Notify the SERC within 60 days of meeting the criteria for an Emergency Planning Facility.
- Document and report spills of EPCRA regulated materials as required to the SERC, LEPC, and the National Response Center.

- Prepare the annual Tier II Inventory report for LaRC and submit to the SERC, LEPC, and Fire Department by March 1, annually.
- Prepare the TRI report for LaRC based on inventories submitted by FECs. The report shall be submitted annually by July 1 to the appropriate Federal, State and local organizations.
- Provide training about EPCRA to FEC's, FSH's and facility personnel.

15.3.2 Facility Environmental Coordinators (FEC's)

- Maintain a hazardous chemicals inventory for their areas of responsibility. The inventory shall be submitted and updated through the Chemical Material Tracking System (CMTS) (see Chapter 19). FEC's shall maintain quantities at the lowest level consistent with needs.
- Submit MSDS's not already in the CMTS library to EMT within 5 working days of receipt of item.
- Report spills to the EMT (See Chapter 14).

15.3.3 Facility Safety Heads (FSH's)

- Ensure that facility personnel who purchase hazardous chemicals follow the procedures outlined in LPR 1710.12 and maintain quantities at the lowest level consistent with needs.
- Ensure that MSDS's are obtained for any hazardous material stored or used at their facility.

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16 UNDERGROUND AND ABOVEGROUND STORAGE TANKS

16.1 GENERAL

This chapter sets forth NASA LaRC policies and requirements for the design, construction, operation, maintenance, monitoring and reporting for underground and aboveground petroleum storage tanks.

As an owner and operator of Underground Storage Tanks (UST's) and Aboveground Storage Tanks (AST's), LaRC must comply with all Federal and State regulations to ensure protection of health and the environment. The policies and requirements of this chapter apply to all LaRC personnel and on-site contractors involved in the installation and use of UST's and AST's at the Center.

16.2 REQUIREMENTS

16.2.1 EPA Regulations

As a result of the Hazardous and Solid Waste Amendments of 1984, the EPA established a National Regulatory Program for the control of new and existing UST's and their associated piping that are used to store liquid petroleum products. In 1988, the EPA issued new performance standards for UST's and associated piping. The requirements were phased in over a ten-year period, with December of 1998 being the deadline for all tanks to be in compliance.

The EPA regulations regarding AST's are contained in 40 CFR Part 112, Spill Prevention, Control, and Countermeasures (SPCC) Plan, and 40 CFR Part 122, the National Pollutant Discharge Elimination System (NPDES)/Storm Water Permit Regulations.

16.2.2 State Regulations

The State of Virginia has EPA-approved regulations for UST's and AST's. The Virginia Department of Environmental Quality (DEQ) is the implementing agency for petroleum storage tank activities in the State. Many of Virginia's requirements exceed the stringency or scope of the Federal regulations. The Virginia storage tank program and regulations can be found at:

<http://www.deq.state.va.us/tanks/storntks.html>

16.2.3 LaRC Requirements

All petroleum storage tank systems must meet the following design and maintenance specifications:

- Tanks must retain structural integrity for their operating life.

- Tanks must be installed and repaired using nationally recognized standards and industry codes.
- Owners and operators must follow proper tank filling procedure. New and upgraded storage tank systems must use devices that prevent overfills and control or contain spills.
- UTS's must be closed by either removing them from the ground or leaving them in place after being drained, cleaned and filled with inert material.
- AST's must be completely drained of material prior to removal.
- Any suspected releases must be investigated by tank owners/operators. Confirmed leaks and spills must be reported within 24 hours
- All petroleum tank systems must meet the current regulatory requirements.
- New tanks must be registered with the State and closed tanks must have closure certification from DEQ.

16.3 RESPONSIBILITIES

All LaRC personnel and contractors involved in the use of petroleum storage tanks must comply with the Center's Integrated Spill Contingency Plan. The plan is maintained by the Environmental Management Team (EMT).

16.3.1 Environmental Management Team (EMT)

- Report all leaks or releases to appropriate state and/or federal agencies.
- Maintain and update, when necessary, storage tank registration and notification forms and submit to the State.
- Review design of storage tank systems to ensure compliance with the latest regulatory requirements.

16.3.1 Research Operations, Maintenance, and Engineering (ROME)

- Review all proposed petroleum storage tank installations to determine necessity.
- Submit design and construction specifications to the EMT prior to installation of any petroleum storage tank system.

- Design or oversee the design of all petroleum storage tank systems to ensure compliance with the latest regulatory requirements.

16.3.2 Tank Operators

All LaRC personnel and on-site contractors who handle or store petroleum products must be trained in spill prevention. All personnel who operate tank systems must be trained in filling, dispensing, and monitoring procedures. Additional responsibilities include:

- In the event of a spill or leak, immediately notify the EMT at extension 43320 and ensure that corrective actions are initiated.
- Monitor leak detection devices (where installed) and take corrective action if leakage is indicated.
- Ensure that adequate maintenance on each tank is performed to ensure satisfactory performance.
- Perform periodic inspections on petroleum tanks and maintain inspections on file.
- Monitor filling of tanks to prevent spills and overflows.

16.3.3 LaRC Employees

All LaRC employees and on-site contractors are responsible for reporting any unusual visible releases from petroleum storage tank filling operations and/or fill ports to the EMT at extension 43320.

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17 HISTORICAL AND CULTURAL RESOURCES

17.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to historical and cultural resources at NASA LaRC. The Center has five National Historic Landmark properties that are listed on the National Register of Historic Places. As a Federal facility, LaRC is required to ensure the protection and proper management of its cultural resources, including historic and prehistoric properties. The Center must survey its properties to determine their significance, nominate eligible properties to the National Register of Historic Places, and consult with the State Historic Preservation Officer (SHPO), and the National Advisory Council on Historic Preservation, if a proposed or ongoing "undertaking" may affect such properties.

To ensure that the Center meets all regulatory requirements, coordination between LaRC personnel responsible for historic and cultural preservation and the appropriate regulatory agencies is essential. The Center's NEPA program, which is explained in Chapter 2, requires this coordination.

17.2 REQUIREMENTS

The National Historic Preservation Act of 1966 (NHPA) establishes the Federal policy of protecting important historic, cultural, and natural aspects of our national heritage during Federal project planning. Section 106 of the Act requires Federal agencies to consult with the National Advisory Council on Historic Preservation on actions adversely affecting listed properties. If a proposed action will destroy or severely damage such a property, records and data must be gathered and maintained which show its original condition. Other requirements are included in the National Environmental Policy Act (NEPA), which obligates Federal agencies to consider the environmental consequences and costs of their projects and programs as part of the planning process.

17.3 RESPONSIBILITIES

17.3.1 Environmental Management Team (EMT)

- Assist the IAMT in managing the Center's historic and cultural preservation program.
- Review project design and specification documentation for issues related to cultural and historic preservation.
- Prepare and maintain the LaRC Environmental Resource Document (ERD) as prescribed in NPR 8580.1, "Implementing the National Environmental Policy and Executive Order 12114."

- Assist with the preparation of historic and cultural resource surveys and documentation as needed.

17.3.2 Research Operations, Maintenance, and Engineering (ROME)

- Assist with preparation of historic and cultural resource surveys and documentation as needed.

17.3.3 Integrated Assessment Management Team (IAMT)

The LaRC Master Planner shall have overall responsibility for the Center's historic and cultural resource program and shall serve as the Federal Preservation Officer (FPO). Additional responsibilities include:

- Oversee the Center's historical and cultural preservation program.
- Complete and submit appropriate forms and nomination packages to the SHPO as required.
- Provide input as required to keep the ERD current as to these matters.
- Prepare and maintain cultural and historic surveys and documentation as needed to ensure LaRC's historic resources are maintained in accordance with the NHPA.

18 POLLUTION PREVENTION

18.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to pollution prevention at NASA LaRC. Pollution prevention is a multimedia approach to environmental management. It extends to air emissions, wastewater, and solid and hazardous wastes.

The Pollution Prevention Act of 1990 established pollution prevention as the preferred approach to environmental protection and waste management. The Act specifies a hierarchical strategy as follows:

- Pollution should be prevented or reduced at the source whenever feasible;
- Pollution that cannot be prevented should be recycled in an environmentally safe manner whenever feasible;
- Pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and
- Disposal or other releases into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

Under this strategy, source reduction is defined as any practice that reduces the amount of hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment prior to recycling, treatment, or disposal. Source reduction includes equipment or technology changes, process or procedure modifications, reformation or redesign of products, substitution of materials, and improvements in housekeeping, maintenance, training, or inventory control.

In order to maintain source reduction and compliance with laws and regulations LaRC is in the beginning stages of its sustainability program.

Sustainability is meeting the needs of the present without compromising the ability of future generations to meet their own needs. NASA as an agency has chosen to use the Natural Step as the framework for integrating sustainability into all of NASA's functions. Sustainability drives us to search for ways to eliminate dependence on nonrenewable resources, eliminate harmful releases to the environment, and respect and maintain life-sustaining natural systems, while ensuring that NASA's mission needs are met.

18.2 Requirements

The Executive Orders described below have been issued to require pollution prevention activities within federal agencies.

- Executive Order 13148 – *Greening the Government Through Leadership in Environmental Management* requires federal agencies to develop and implement written pollution prevention strategies and environmental management systems, and to reduce the use of selected toxic chemicals, hazardous substances and pollutants. In addition, federal agencies must comply with the planning and electronic reporting provisions of the Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA Toxic Release Inventory (TRI) releases and off-site transfers must be reduced, as well as criteria air pollutants attributed to facility energy. All Class I ozone-depleting substance procurement and use must also be phased out. Agencies are also mandated to purchase environmentally preferable and recycled products.
- Executive Order 13101 – *Greening the Government Through Waste Prevention, Recycling and Procurement* directs federal agencies to implement acquisition programs aimed at encouraging new technologies and building markets for environmentally preferable and recycled products. It also directs federal agencies to set recycling goals.

18.3 CENTER GOALS

LaRC is committed to an active policy of protecting the environment in all Center research and support activities. The Center has the following goals to reduce the quantity and toxicity of generated wastes through pollution prevention:

- Provide a clean and safe environment for our community.
- Ensure a safe and healthy workplace for LaRC personnel.
- Comply with all applicable laws and regulations while efficiently accomplishing our mission.
- Reduce future waste disposal liability.
- Reduce waste generation, hazardous material usage, and management costs.

To meet these goals, LaRC will seek out and implement opportunities to reduce or eliminate waste generation through pollution prevention methodologies. There are also other important benefits related to pollution prevention. These include reduced process operation and waste management costs, reduced waste and emissions, and reduced waste toxicity.

When applying pollution prevention methodologies to LaRC activities, source reduction technology is given priority. Where source reduction is infeasible, other pollution prevention methods such as material substitution, reuse, or recycling shall be used. Remaining wastes, for which no pollution prevention option is warranted, shall be

treated to decrease volume or toxicity and managed responsibly to minimize effects on human health and the environment.

18.4 RESPONSIBILITIES

Pollution prevention is the responsibility of all LaRC personnel. Specific responsibilities follow:

18.4.1 Environmental Management Team (EMT)

- Understand the requirements of E.O. 13148.
- Update the LaRC Pollution Prevention/Sustainability Plan annually.
- Prepare and submit the annual pollution prevention progress report to NASA Headquarters.
- Review LaRC specifications and standards and, where possible, recommend reducing the acquisition and use of products containing extremely hazardous substances.
- Prepare metrics to document the Center's pollution prevention activities.
- Conduct pollution prevention opportunity assessments and recommend implementation of projects as appropriate.
- Request funding to support pollution prevention activities.
- Provide pollution prevention training to LaRC personnel as needed.

18.4.2 Facility Environmental Coordinators (FEC's)

- Understand the requirements of E.O. 13148.
- Minimize the volume and toxicity of waste generated by their facilities to the extent technically possible and economically feasible.
- Propose operations or projects for pollution prevention opportunity assessments.
- Schedule training to familiarize personnel with pollution prevention practices.
- Participate with the EMT in conducting pollution prevention opportunity assessments.
- Develop and implement pollution prevention projects.

- Provide the EMT with data to evaluate the effectiveness of pollution prevention projects.

18.4.3 Personnel serving as the Heads of Organizational Units

- Understand the requirements of E.O. 13148.
- Support all personnel participating in pollution prevention projects.
- Utilize pollution prevention and sustainability concepts in operation and management activities.

18.4.4 Logistics Management Team (LMT)

- Understand the requirements of E.O. 13148.
- Identify markets for recycled materials.
- Advise the EMT of property disposal and resale requirements.
- Provide the EMT with data to evaluate the effectiveness of pollution prevention projects.

18.4.5 LaRC Personnel

- Understand the concepts of pollution prevention and sustainability.
- Participate in the Center's pollution prevention program.
- Attend pollution prevention training courses at their facilities.
- Propose pollution prevention projects.
- Minimize the volume and toxicity of waste generated by their facilities to the extent technically possible and economically feasible.

19 HAZARDOUS MATERIALS MANAGEMENT

19.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to hazardous materials management at NASA LaRC. As part of its mission, LaRC uses a wide variety of hazardous materials and chemicals. A hazardous chemical is any material that because its quantity, concentration, physical or chemical characteristics, poses a hazard to human health and safety or to the environment if released into the workplace or the environment. By law and by necessity, hazardous materials must be carefully managed to prevent harm to the public, employees, equipment and the environment. This chapter includes information on chemical inventory management, storage, and transportation security requirements. The requirements of this chapter apply to all personnel performing work on site at LaRC.

The Center uses a web-based Chemical Material Tracking System (CMTS) that assists facility personnel in managing their hazardous materials inventories and provides data to the LaRC Environmental Management Team (EMT) for regulatory reporting. Improved record keeping and better management of hazardous materials helps avoid compliance problems, reduce waste generation, and cut costs from raw material purchases and disposal activities. The CMTS also has an online Material Safety Data Sheet (MSDS) library to allow employees to understand the hazards of materials they handle or encounter at the Center. The information in the CMTS inventories provides EMT with a master list of hazardous material storage sites. This information is provided to local fire departments to aid them in identifying the storage location of hazardous chemicals in the event of a fire emergency.

Since September 11, 2001, the Research and Special Programs Administration (RSPA) of the Department of Transportation (DOT) has worked closely with Federal, state, and local government agencies, to improve the security of hazardous materials in the transportation system. RSPA requires that shippers and carriers of certain highly hazardous materials develop and implement security plans. In accordance with the RSPA requirements, the LaRC EMT has developed a Hazardous Material and Hazardous Waste (HM/HW) Security Plan. The plan includes measures to verify background information for employees and contractors with access to hazardous materials and hazardous wastes; measures to address unauthorized access; and measures to address the assessed security risks of material and waste shipments while in transit. The plan is available by contacting the LaRC EMT at extension 43500.

19.2 REQUIREMENTS

Hazardous materials include any item or chemical that is a “health hazard” or a “chemical hazard” as defined by the Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.1200. Any item reportable under the Emergency Planning

Community Right-to-Know Act (EPCRA) would also be considered a hazardous material. Additionally, the Clean Air Act requires the Center to keep a current air emissions inventory for activities conducted at the Center (see Chapter 4). The CMTS provides most of the pertinent data to generate both the EPCRA reports and air emissions inventory. The CMTS is required to be used by all LaRC and contractor personnel to comply with the inventory requirements in both environmental statutes and LPR 1710.12, "*Potentially Hazardous Materials*."

Material Safety Data Sheets (MSDS's) are a key component in the generation of environmental compliance reports. MSDS's for materials currently used at the Center are maintained and available through the CMTS. MSDS's are required for all Hazardous Materials on the Center to ensure proper calculations for environmental reporting as well as to have important health and safety information available. Additional information regarding environmental and safety requirements for managing hazardous materials can be found in the following regulations:

- Title 40 CFR 355, Emergency Planning and Notification
- Title 40 CFR 370, Hazardous Chemical Reporting; Community Right-To-Know
- Title 40 CFR 372, Toxic Chemical Release Reporting; Community Right-To-Know
- Title 29 CFR 1910.1200, Hazard Communication
- Title 29 CFR 1960 Basic Program Elements for Federal Occupational Safety and Health

19.3 RESPONSIBILITIES

This section outlines the roles and responsibilities of Center and contractor personnel in order to properly manage hazardous materials. Additional responsibilities for chemical management can be found in LPR 1710.12, "Potentially Hazardous Materials," which is available at: <http://ldms.larc.nasa.gov/>

19.3.1 Environmental Management Team (EMT)

The EMT ensures that hazardous material management at the Center is done in an environmentally responsible manner. In addition, the EMT is the functional proponent of the CMTS and has primary responsibility to update and maintain the CMTS system. Additional responsibilities include:

- Review and approve Langley Form 44's.
- Provide support, guidance, policies and procedures, training, and assistance to LaRC personnel using the CMTS.
- Send all CMTS users quarterly notifications indicating due dates for the inventory certifications.
- Use the CMTS capability to help compile the annual required regulatory reports.
- Ensure chemical storage is in compliance with LPR 1710.12.

- Ensure internal compliance with the LaRC HM/HW Transportation Security Plan and updates as necessary.

19.3.2 Facility Environmental Coordinators (FEC's)

- Either appoint or serve as the Hazardous Material Inventory Manager and ensure duties are performed as specified in Section 19.3.6 of this Chapter.
- Ensure their facility stores all hazardous materials in accordance with LPR 1710.12.
- Ensure that personnel within their facility responsible for hazardous materials management receive appropriate training.
- Adhere to LaRC's transportation security policies and procedures as outlined in the HM/HW Security Plan.

19.3.3 LaRC Personnel and Contractors

- Ensure that the FEC, FSH, and Hazardous Material Inventory Manager are notified when hazardous materials are brought into a facility, including PR, credit card purchase, or vendor samples.
- Use the electronic Langley Form 44 approval process, in accordance with LPR 1710.12 and LMS-CP-4759, to purchase hazardous materials and for sample products received from vendors.
- Adhere to LaRC's transportation security policies and procedures as outlined in the HM/HW Security Plan.

19.3.4 Facility Safety Heads (FSH's)

- Review and approve Langley Form 44's.
- Ensure that hazardous materials are purchased in accordance with procedures established in LPR 1710.12, to include using the electronic Langley Form 44 approval process as outlined in LMS-CP-4759, available electronically at:
http://lms-r.larc.nasa.gov/Improve/Process_docs/4759.pdf.
- Ensure that facility personnel are trained in proper hazardous material management practices.
- Ensure that a MSDS is obtained for all hazardous materials prior to purchasing or receiving any hazardous material.
- Assist the Hazardous Material Inventory Manager in maintaining an accurate inventory of hazardous materials.

- Ensure their facility stores all hazardous materials in accordance with LPR 1710.12.
- Adhere to LaRC's transportation security policies and procedures outlined in the HM/HW Security Plan.

19.3.5 Logistics Management Team (LMT)

- Provide the following information to the EMT on a quarterly basis for all materials requiring MSDS's issued from stock. Data shall be in an electronic format readable in Microsoft Excel or Microsoft SQL Server 7.0.
 1. National Stock Number (NSN)
 2. Customer;
 3. Date of issue;
 4. Unit description;
 5. Quantity on-hand, maximum quantity on-hand, and re-order point;
 6. Unit of issue;
 7. Unit conversion code or other description of the unit of issue, (for example 5 gallon can);
 8. For each NSN, provide a sum of total quantity (unit of issue) issued.
- Maintain stock cylinder data within the CMTS Cylinder Module.
- Maintain facility inventory, in accordance with this Chapter.
- Adhere to LaRC's transportation security policies and procedures outlined in the HM/HW Security Plan.

19.3.6 Hazardous Material Inventory Managers

- Certify accuracy of chemical inventories by submitting Quarterly Inventory Update Certifications, found through CMTS Inventory Maintenance. The CMTS database inventory for the facility **must** be reconciled with the physical inventory. At a minimum, reconcile the physical inventory with the inventory reported and maintained in the CMTS **quarterly** (Mar 31, Jun 30, Sep 31, Dec 31).
- Facilities with no hazardous materials must submit an annual No Hazardous Materials Certification by January 1 of each year. The form can be found at <http://osemant1.larc.nasa.gov/cmts/instruct/manuals> under the Inventory Update Guide.
- Ensure hazardous material is properly identified and labeled with a CMTS label.
- Identify cylinder and bulk containers in the CMTS inventory with a "c" for cylinders and "b" for bulks.

- Ensure all hazardous materials in the CMTS inventory have a MSDS attached.
- Manage the chemical inventory stored or used at the facility in accordance with all applicable health, safety, and environmental regulations to include LPR 1710.12.
- Manage the chemical inventory to reduce waste from shelf-life expiration. Where possible, and in accordance with all health and safety requirements, transfer unused or excess chemicals to the Center's Reuse Facility or other facilities where they can be used prior to reaching shelf-life expiration date.
- Adhere to LaRC's transportation security policies and procedures outlined in the HM/HW Security Plan.

19.3.7 Safety and Facility Assurance Office (SFAO)

- Review and approve Langley Form 44's.
- Notify the EMT of concerns that pertain to hazardous materials management.
- Provide technical and administrative guidance to LaRC personnel for the safe use of hazardous material.
- Assist personnel in the interpretation of MSDS technical data.
- Supply MSDS's, if available, from MSDS databases or assist in the acquisition and technical interpretation of proprietary or trade secret MSDS information.

Appendix A - Glossary of Terms

Categorical Exclusion (CE). "Categorical Exclusion" means a category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations and for which, therefore, neither an EA or EIS is required.

Clean Air Act of 1970. Requires prevention, control, and abatement of air pollution from stationary and mobile sources (also includes asbestos removal and disposal regulations, and greatly reduces the use of ozone depleting substances.)

Clean Water Act of 1970. Regulates discharge of pollutants into waters of the U.S. from any point source including industrial facilities and sewage treatment plants. Regulates storm water runoff from certain industrial sources. Requires reporting and cleanup of oil and hazardous substance spills in waterways. Protects waterways. Requires a permit to dredge, fill, or disturb wetlands. Requires spill prevention plans for sites that store petroleum products.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. Regulates cleanup of abandoned hazardous waste sites. CERCLA also known as "Superfund" regulates releases of hazardous substances into the environment.

Construction of Facilities (CoF). Those activities directed toward construction of new facilities; repair, rehabilitation, and modification of existing facilities; acquisition of related facility equipment; design of facilities projects; and advance planning related to future facilities needs.

Construction of Facilities Project. The consolidation of applicable specific individual types of facility work, including related collateral equipment, which is required to fully reflect all of the needs, generally relating to one facility, which have been or may be generated by the same set of events or circumstances which are required to be accomplished at one time in order to provide for the planned initial operational use of the facility or a discrete portion thereof. Facility projects are subject to the NEPA requirements.

Emergency Planning and Community Right-to Know Act (EPCRA) of 1986. Provides local governments information concerning possible chemical hazards in the community. Requires emergency planning for releases of extremely hazardous substances. Requires facilities to publicly report releases of toxic chemicals into the environment.

Endangered Species Act (ESA) of 1973. Requires that all actions not jeopardize, threaten, destroy, or adversely impact critical habitats or the existence of endangered species.

Environmental Analysis. The analysis of the environmental effects of proposed actions, including alternative proposals. The analyses are carried out from the very earliest of planning studies for the action in question, and are the materials from which the more formal environmental assessments, environmental impact statements, and public record of decisions are made.

Environmental Assessment (EA). A concise public document prepared by a Federal agency to determine the environmental impact of a proposed action and alternatives. An EA briefly provides sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI.

Environmental Impact Statement (EIS). A document that is prepared for an action which may have significant impact on the quality of the human environment or which has the potential for controversy in environmental effects. The primary purpose of an EIS is to serve as a device for use by officials to plan actions and make decisions. It provides information that must be considered throughout the decision process. An EIS is filed with the EPA and published and distributed widely for public comment.

Environmental Monitoring Report. A report that monitors mitigation measures and other commitments associated with the project decision and changes in the project.

E.O. 13149 (April 21, 2000). Supersedes E.O. 13031. *Greening the Government Through Federal Fleet and Transportation Efficiency.* Mandates the reduction of petroleum fuel consumption, encouraging the use of alternatively fueled vehicles by Federal agencies to substantially reduce toxic and hazardous air pollutants.

E.O. 13148 (April 22, 2000). *Greening the Government Through Leadership in Environmental Management.* This order challenges the Federal government to publicly lead by example through applying source reduction in the management of its facilities and in its acquisition practices. It commits Federal agencies to publicly report toxic wastes and emissions and to reduce toxic releases by 40%, overall, by the end of 2006.

E.O. 13123 (June 3, 1999). Supersedes E.O. 12902 - *Greening the Government Through Efficient Energy Management.* Requires agencies to develop and implement programs to reduce water and energy consumption and increase energy efficiency at their facilities in a variety of ways including using alternative, less-polluting fuels and energy sources instead of petroleum-based products.

E.O. 13101 (September 14, 1998). *Greening the Government Through Recycling, Waste Prevention and Federal Acquisition.* Directs Federal agencies to promote cost-effective waste reduction and recycling activities. Requires all Federal agencies to

develop an affirmative procurement program designed to purchase products with recycled content.

Finding of No Significant Impact (FONSI). A document prepared by LaRC staff which presents the reasons an action will not have a significant effect on the human environment and for which an EIS will not be prepared. It is typically published in a local newspaper and coordinated with a State point of contact.

Major Facility Project. New construction in excess of \$1,500,000; Repair, Rehabilitation and Modification in excess of \$1,500,000, and Land Acquisition and Emergency Repair approved under the provisions of Section 308(b) of the National Aeronautics and Space Act of 1958 (as amended) at any cost. Requires a detailed EA.

Minor Facility Project. New construction in excess of \$500,000 and not exceeding \$1,500,000; Repair, Rehabilitation, and Modification in excess of \$500,000 and not exceeding \$1,500,000. Requires a detailed Environmental Analysis.

National Environmental Policy Act (NEPA) of 1969. Mandates Federal agencies to “utilize a systematic, interdisciplinary approach to ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man’s environment.” Requires detailed statements on the potential environmental impacts of major Federal actions to be included in every recommendation or report on proposals to legislation.

Natural Historic Preservation Act (NHPA) of 1966. Requires Federal agencies to consider the effects of their actions (e.g., construction, leasing, and land transactions) on cultural and historic resources.

Noise Control Act of 1972. Establishes noise standards, and regulates noise emissions from commercial products, such as transportation and construction equipment.

Notice of Intent. A notice that an EIS will be prepared and considered. It summarizes issues uncovered in the EA, if one was done. The notice shall briefly describe the proposed action and possible alternatives, describe the agency's proposed scoping process including whether, when, and where any scoping meeting will be held, and state the name and address of a person within the agency who can answer questions about the proposed action and the EIS. This notice is required by law to allow interested parties to participate in the EIS development or to review it upon completion.

Pollution Prevention Act of 1990. Mandates a national policy creating a hierarchy of preferred waste management approaches: source reduction, recycling, treatment, and disposal, all to be conducted in an environmentally safe manner.

Research and Development (R&D). Those activities directed towards attaining the objectives of a specific mission, project, or program. All of NASA's aeronautics and

space program elements are categorized within the R&D program categories. R&D funds are expended chiefly for contracted research and development and for research grants. Some R&D funds are also expended in support of in-house research (e.g., equipment purchases and other research support, but not civil service salaries).

Record of Decision. (RoD) A document that describes how environmental considerations, and the EIS itself, entered into the decision. It is not published in the Federal register, but made available upon request.

Research and Development Project. A discrete research and development activity, with a scheduled beginning and ending, which normally involves one of the following primary purposes.

- A. The design, development, and demonstration of major advanced technology hardware items;
- B. The design, construction, and operation of a new launch vehicle (and associated ground support) during its research and development phase; or,
- C. The construction and operation of one or more aeronautics or space vehicles (and necessary ground support) in order to accomplish a scientific or technical objective. R&D projects are subject to the decision processes in 14CFR1216.304.

Research and Program Management (R&PM). Those activities directed towards the general support of the NASA institution charged with the conduct of the aeronautics and space program. R&PM funds are expended for the NASA civil service work force (both for performing in-house R&D and for planning, managing, and supporting contractor and grantee R&D), and for other general supporting functions.

Resource Conservation and Recovery Act (RCRA). Establishes guidelines and standards for solid and non-hazardous waste generation, transportation, treatment, storage, and disposal. Requires management of underground storage tanks (UST's) and cleanup of hydrocarbon contamination. Establishes a national policy to minimize the generation of hazardous waste and the land disposal of hazardous waste by encouraging process substitution, materials recovery, properly conducted recycling and reuse, and treatment. Mandates that hazardous waste generators and treatment, storage, and disposal facilities have a hazardous waste minimization program in place.

Toxic Substances Control Act (TSCA) of 1976. Prohibits or limits the manufacture, process, distribution in commerce, use, or disposal, of a chemical substance. Regulates the management, disposal, and labeling of materials such as asbestos and PCB's.

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